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RAIL-ROAD NEWS.

Steam Carriage for Plank Roads.

A Steam Carriage Company, for plank roads, has been formed in this city, the capital to consist of $100,000. We certainly wish the company all success, but it is our opinion that a system of that kind cannot work economically. That steam carriages can be made to run on common roads at the rate of 10 miles per hour, is nothing problematical; this has been done, as we have seen them running at that rate with our own eyes—but they did not pay in competition with horses. Great improvements are stated to have been made in the new carriages. This helps the matter, no doubt, and those who have calculated the profit and loss, say they believe it can be made to pay. Our opinion is a different one, and nothing but a practical test—fair, full, and unrestrained—can settle the question. We hope the company will do this at an early period. If we are mistaken, we shall be most happy to give publicity to our own mistake; if not, we claim the privilege, as in the case of the Annihilator, "to make a note of the matter." We must say that we are somewhat in favor of the scheme—and our plank roads furnish a very fair and reasonable field for trial.

Rutland and Burlington Railroad.

The special meeting of the stockholders of this road was held at Bellows Falls, on Wednesday, the 17th inst., to take into consideration the present financial condition of the company. The stockholders voted, almost without a dissenting voice, to issue 17,000 shares of new stock at one hundred dollars per share, with the privilege of putting in an equal number of old shares, and making them both a six per cent. preferred stock.

A Conservative.

Mr. Thompson, a member of the Legislature of Tennessee, declares himself opposed to all railroads. He regards them as injurious to the country and to the morals of towns, and was in favor of a law directing the Attorney General to prosecute the travelling orators who go about the country to advocate them. —[Exchange.

Can there be such a man living as this Thompson. We scarcely believe it; but it is not impossible.

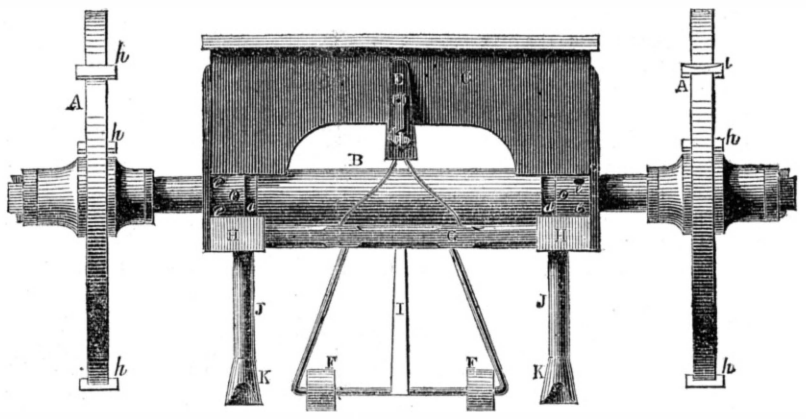
The cars on the Ohio and Pennsylvania Railroad run now from Cleveland to Pittsburg in twelve hours. What a change! A few years ago people took nearly as many days to go from the one place to the other.

The Erie Railroad Company is about to fund a new floating debt of three million dollars, by an auction sale, at 7 per cent.

The second track of the New York and New Haven Railroad is finished from New Haven to Fairfield.

In Indiana there are now 450 miles of railroad completed and run over by daily trains There are 1,020 miles under construction.—Well done Indiana.

REDICK'S CORN PLANTER.

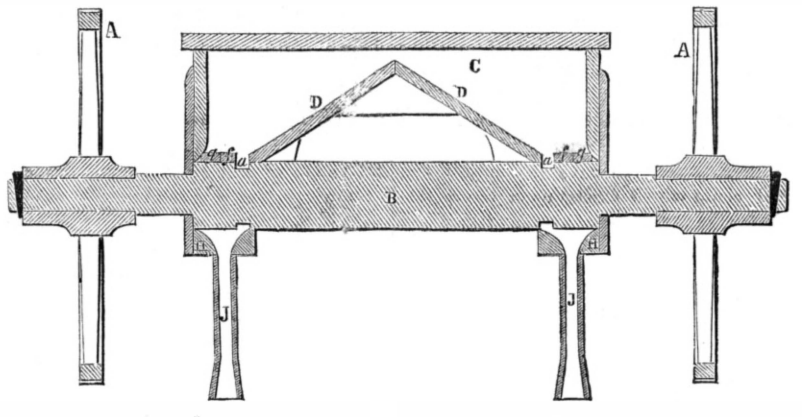


The accompanying engravings represent an improvement in corn planting implements invented by Mr. William Redick, of Uniontown, Fayette Co., Pa., and for which a patent was granted on the 18th of last November, 1851.

Fig. 1 is a back view, and fig. 2 is a transverse section through the hopper. The same letters refer to like parts.

A A are the wheels; B is an axle with square ends fitting into like mortices. The wheels and axle move together; C is the hopper or seed box formed with two inclined planes, D. There are openings on each side of this hopper, which span the grooves, *a*, and the cells, *c e*, in the axle, which receive and carry the grain to the seeding tubes. The openings in the bottom of the hopper, are provided with movable slats, *f g*, which slide in grooves cut in the sides of the hopper. The slats are of such width, as to afford communication at all times with either of the grooves, *a*, for drilling grain, or by moving the slats towards the centre of the hopper, to close communication with the grooves and open it with the cells, *c*, for planting in *check rows*, or by sliding both slats, *f g*, towards the centre of the hopper, to close communication between it and the grooves and cells, *a c*, and open it with cells, *e*, for planting in step-rows. The wheels have markers, *h*, on them; they may be made of metal and bolted to the felloe of the wheel. They correspond in number with the cells, or their divisions of them, so as to be an index of each deposit of grain. The markers may be made like *i* (fig. 1), a sharp scoop, for hard ground. The markers represented correspond in number with the cells, *c* in the axle, and make a mark precisely opposite the grain dropped from each of said cells, *c*. When the cells, *e*, are used, the markers tally only each alternate row, and when drilling in the corn by the grooves, *a*, no attention whatever need be given to the markers. When the markers do not match the marks of previous rows, the lever, E, is thrown up bringing the whole weight of the seeding machine (and which is entirely raised off the ground,

Figure 2.



thereby) upon the truck wheels, F, and upon which wheels, it is allowed to move until the marker comes over the exact spot. The lever, E, is then pulled down, and the machine commences planting again on the proper line. By this arrangement corn can be planted in precisely straight lines both ways, and in cultivating the corn, there is no danger in overrunning the rows.

The truck, F is supported on a bar, G, which rests on its journal in the rear projections of the shafts, H, and in which journals it may freely turn. When the machine is being moved from field to field, or unused, the lever is thrown up towards the hopper and staple, as represented, this brings the whole machine on to the truck, which is prevented from falling back by a strap or chain (not seen) which is attached to the axle of the truck, and is fastened to a brace between the shafts in front of the hopper. The seeding tubes, J, pass up through the shafts and have funnel-shaped mouths, as shown in fig. 2., for receiving the grain from the grooves, *a*, or either of the rows or cells, *c e*. The bottoms of the seeding tubes pass into and rest on the shoes, K, which open the furrows into which the corn drops, the earth closing over it after the usual manner of drilling other grain. Corn, or other grain or seeds, can by this arrangement by means of the slides, *f g*, be planted in three different ways, viz., by means of the groove, *a*, in drills; by the cells in *check* and *step rows*; either of them being effected by a simple adjustment or movement of the said slides.

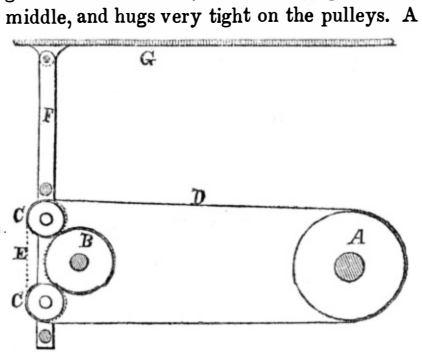
The claim is for the combination of the slides, *f*, with the grooves, *a*, (which drill in the grain) and the cells, *c e*, so that by moving the slats, *f*, towards the centre of the hopper, to close the communication with the grooves, and open it with the cells, *c*, for planting in *check rows*, or by moving both of the slats or slides, *f g*, towards the centre of the hopper, to close the communication between the hopper, and grooves, and cells, *a c*, and open it with the cells, *e*, for planting in "step rows." This simple and beautiful arrangement is well worthy the attention of our farmers. More information may be obtained by letter addressed to Mr. Redick.

Stone Cutting Machine in a Railroad Tunnel.

One of Wilson's stone dressing machines, the same as the one illustrated and described by us in No. 14, we hear is employed in the tunnel of the Troy and Greenfield Railroad, which is now being cut through the Hoosac Mountain. The machine is worked by a steam engine. To show what it could do, a block of granite, ten feet long and four feet wide, was placed on a carriage and submitted to a single cutter, guaged to cut two inches from its surface. It passed over the entire stone in twenty-two minutes, and cut off 1,600 pounds of rock, leaving the same as smooth as any hammer dressed stone.

Improvements in Running Belting.

The accompanying engraving represents a vertical section of a plan for relieving long belting from strain, invented by Mr. Nathaniel Nuckolls, of Columbus, Ga., who has taken measures to secure the same by patent. It is well known that a long belt involves a great deal of friction, because it sags in the middle, and hugs very tight on the pulleys. A



represents a pulley on the main line of shafting, and B is a pulley on a secondary shaft, to be driven by the belt, D, coming from the large pulley, A. It will be observed that the belt, D, does not run over the pulley, B, in the common way that belting is put up. It passes first over a small pulley, C, then behind pulley, B, and comes forward like the letter, S, over the small lower pulley, C, and back in a direct line, horizontally with the periphery of the pulley, A. G is a beam in the ceiling of the room, and to it is secured a hanging frame, F, into which are secured two small pulleys, C C, running in bearings in the said frame. Over these two pulleys, C C, are hung two belts, one at each side, and the large belt, D, runs between. The dotted line, E, shows one of the small belts, which runs around the pulleys and acts on the face of the larger pulley, B; this keeps the long belt, D, taut, prevents it from sagging at the middle. The small frame, F, is free to swing.

More information may be obtained by letter addressed to Mr. Nuckolls.

Wild Orange Wine.

We see by some of our Southern exchanges that a delicious beverage is now made out of the wild orange, heretofore deemed useless

The wild or bitter orange is first deprived of its juice by strong pressure on large quantities of the fruit; the juice is put into barrels, closed up, and allowed to ferment for a few months. By this process it loses its bitter taste, and becomes clear and limpid. It is then bottled, a wine-glass full of old cognac being poured into each bottle, together with a small quantity of sugar. The liquid thus formed is not a cordial or *liqueur*, but appertains specially to the class of wines.

The bitter orange abounds on almost every plantation in the States. It has hitherto been regarded as an almost useless, product, except now and then when necessity compelled it to replace the lemon. It was but an indifferent substitute, however.

A new cotton factory, recently erected at Reading, Pa., by Senator James, of Rhode Island, has been put into operation.

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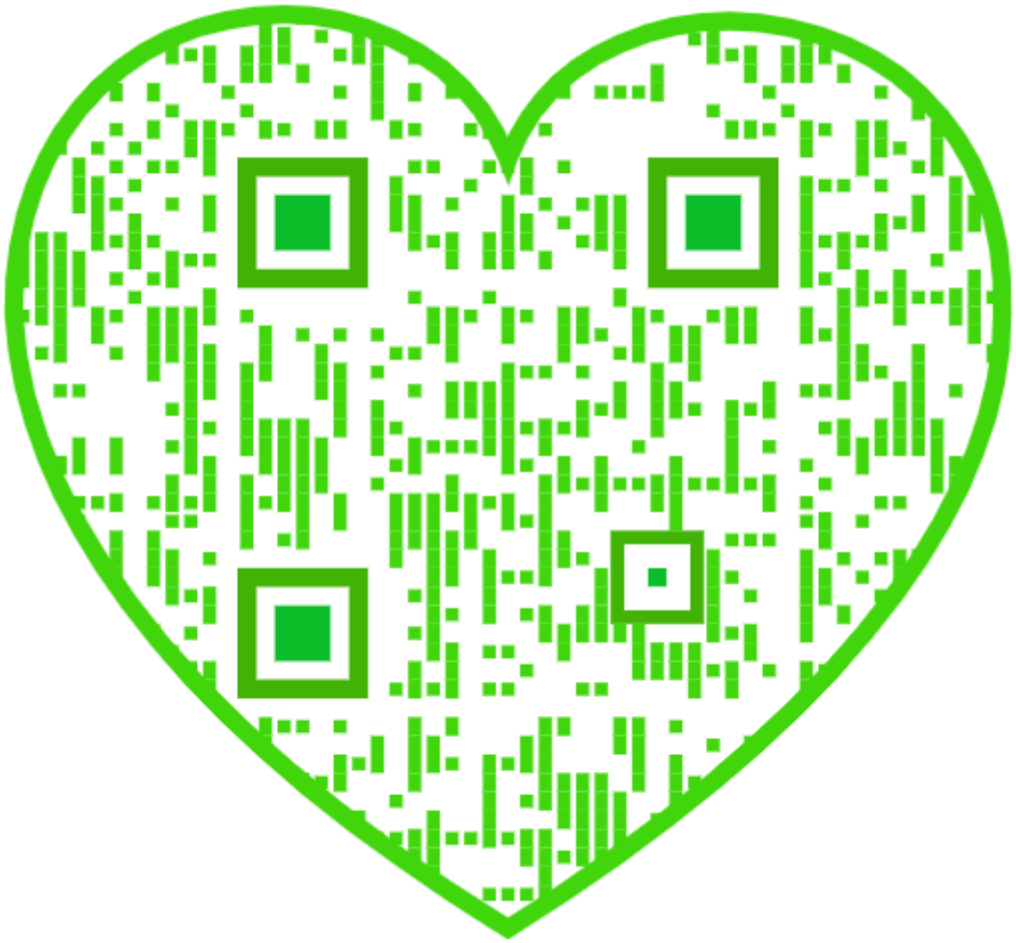

MISCELLANEOUS.

Mandrakes.

"A fruit called mandrake grows wild on a farm in Buckland, Mass., near Shelbourne Falls, and grows not elsewhere in the vicinity. It has grown there time out of mind. Some three or four are borne upon each stalk. The stalks are annual and grow to the height of twelve or eighteen inches. The owner of the farm said that the seeds would not grow. The fruit is soft, juicy, and very delicious. It is strongly fragant, of a very pleasant, agreeable odor. It grows in a moist place of a few feet in circumference, near the house."

Mandrakes are quite common in various parts of our country, and we have known them successfully used as a medicine by those skilled in the diseases of cattle. We have known mandrake tea prescribed by an old farmer for the cow of a widow, which every body supposed to be dying, but to the astonishment of all, it recovered rapidly after the mandrake tea was given. Mandrakes have been known from very ancient times as a soporific of considerable virtue; small doses of its bark have done good in cases of hysteric disorders; but if used in large doses it has caused convulsions. It is recorded in some works, that there is in the province of Pekin, in China, a kind of mandrake so valuable that a pound of its root is worth three pounds of silver. It so powerfully affects sinking spirits as to restore to vivacity and health those whose condition was otherwise considered desperate. We find mandrakes mentioned in old Biblical history.

Rapidity of Thought in Dreaming.

A very remarkable circumstance, and important point of analogy, is to be found in the extreme rapidity with which the mental operations are performed, or rather with which the material changes on which the ideas depend are excited in the hemispherical ganglia. It would appear as if a whole series of acts, that would really occupy a long lapse of time, pass ideally through the mind in one instant. We have in dreams no true perception of the lapse of time—a strange property of mind! for if such be also its property when entered into the eternal disembodied state, time will appear to us eternity. The relations of space as well as of time are also annihilated, so that while almost an eternity is compressed into a moment, infinite space is traversed more swiftly than by real thought. There are numerous illustrations of this on record. A gentleman dreamt that he had enlisted as a soldier, joined his regiment, deserted, was apprehended, carried back, tried, condemned to be shot, and at last led out for execution. After all the usual preparations he awoke with the report, and found that a noise in an adjoining room had, at the same moment, produced the dream and awakened him. A friend of Dr. Abercrombie's dreamt that he crossed the Atlantic, and spent a fortnight in America. In embarking on his return, he fell into the sea, and awaking in the fright, found that he had not been asleep ten minutes.

(For the Scientific American.)

Stone Ware.

This place has sprung into notoriety, from obscurity, within the last six years from the the manufacture of Rockingham and Yellow Queen's ware, and promises, ere long, to successfully rival the English manufacture of some classes of goods; already is there an amount of business being done in the manu facture of this ware, and the consequent cultivation of the arts and sciences, that, to those who have viewed Ohio as a wilderness of wood, would be astonishing. There are now eight factories in successful operation, and two others starting, all commenced by workingmen, practical potters themselves. The amount of ware already shipped from this point is about $200,000 worth per annum; the number of men employed is some four or five hundred; one factory is engaged exclusively in the manufacture of door knobs. The neighborhood abounds with good clay and coal—the location is extremely healthy, and being situated immediately on the Ohio river, is approachable, at all times, from the west, south, or east some; of the manufacturers (Harker, Thompson & Co., and Woodward, Blakely & Co.), do a large business in New York, Boston, and Philadelphia, and their goods are appreciated, as the medals lately awarded by the institutions in those places, bear ample testimony. J. T.

East Liverpool, Ohio.

The Patent Office.

Messrs. Editors—As the columns of the Scientific American have ever been prominent in advocating the interests of patentees and inventors at large, and as the subject is one fraught with no small importance to the rights of this rapidly increasing section of the community (demanding their immediate and energetic co-operation in self-defence), I presume to solicit your aid in the support of a Memorial, which has been framed for presentation to Congress, praying for the formation of a committee to investigate into the present condition and requirements of the Patent Office, the deficiency of room and want of facilities which now exist, requisite provisions and extensions for the future, also directing attention to the assault made on public right, by the Secretary of the Interior, in his recent proposition illegitimately to appropriate a portion of the much-needed building to purposes foreign to the branch to which it belongs, and, as a precedent which it involves, is of a more serious character than the supineness of those whose interests it invades, would appear to convey. This latter theme of the petition has already, in a prompt and praiseworthy manner, engaged your consideration. A large amount of the room is occupied by curiosities of art, which are more appropriately the contents of a Museum, while (for want of space) the provisions of the law have been grossly disregarded; in proof of which abuse, I would particularly call your attention to the 20th section of the law of the 4th of July, 1836, wherein is enacted, that room shall be provided for a classified arrangement and "favorable display" of Models and Specimens, "patented or unpatented." Now what do we find to be the compliance with this provision? Patented cases alone have any pretension to such arrangement, and that in a very defective manner, while models, &c., pertaining to rejected applications, are promiscuously inhumed, as if their obscurity and decay had been the desire of their unfortunate contributors. It has, upon good authority, been estimated that, within by a means a large space of time, theentire building, as originally designed by the Architect, will —every inch of its available space—be found necessary for the transaction of Patent Office business, and when we regard the daily increasing number of inventors, it is far from problematical that such will be the case. It is the duty, therefore, of every patentee and inventor, justly to protest against the present and proposed misappropriation of the building; and, secondly, to advance the just and lawful claim which exists, upon the public funds, for the necessary extension and amendment of that Department.

In matters of private right, it is seldom, if ever, found necessary to urge or agitate the demand; why it should be so where public interests are involved, is a mystery, and particularly so when the parties more immediately concerned compose a distinct and separate body; but present silence is corroborative of the fact. Let not any man rely upon his neighbor performing that which it is equally his own interest and duty to do, and then, but not till then, the work will be done. An example, not mere talk, has been set. Inventors! rouse yourselves without loss of time, and follow it. A Patentee.

[We hope our inventors and patentees will take the advice of our correspondent, who is a gentleman well qualified to speak on the subject, both from feeling and experience. We hope the Committee on Patents will probe this matter to the bottom; and we also hope that they will make a special investigation into the way business is conducted at the Patent Office. From what we know about the Committee on Patents, we think and hope that the members of it will give Patent Office matters a great deal of attention. In Congress, we regret to say, party animosities and interests occupy too much attention to the neglect of real useful measures. There is not a more important institution in America than the Patent Office, and upon its proper management much of our country's prosperity depends. If any one turns his thoughts and eyes for a moment to the mechanical interests of our country, he will immediately be impressed with the fact that these interests are not only the *sheet-anchor*, but the *main-sail*, also, of our country—of every country. Those who improve machinery add wealth and honor to the whole people; for what would agriculture, or any other art, be without machinery? and the great advancement made in every art is greatly indebted to mechanical invention. What would our farmers do without improved plows? And what would astronomy be without the telescope? We hope the present Congress will make the Patent Office, in all its interests and workings, a special object of attention. We believe this will be done.

Circular Saws.

D. T. L., of Monument Isle, N. Y., writes us that he has had much trouble and perplexity in learning to keep saws in good order, his business has principally been cutting soft timber—pine and hemlock. He has run a 24 inch saw from 1,500 to 2,000 revolutions per minute, in timber from 4 to 10 inches in thickness without heating or irregularity of line, and without water. He has seen saws vibrate, because of being too much set. His plan is to have the teeth of equal length, and jointed to a circle just set enough to clear well and carry away the cut dust. If the saw plate is imperfect and requires more set than its thickness will bear, he uses a swedge to make the points of the teeth thicker than the plate.—For a slitting saw he leaves the back of the tooth as full as will clear its circle; it is thus stronger and holds its set better.

Mr. Norman Allen, of Unionville, Conn., informs us that a friend of his was much troubled with the heating of the circular saw, when he thought he would try the experiment of drilling a ½inch hole through it at 1½ inches from the point of the teeth and then filed down to it. He was astonished at the result, and thinks he can saw twice as much as he could do before, without heating the saw.

Mr. Geo. W. Cunningham of Athens, Fayette Co., Ky., discovered a plan of like nature to that stated by Mr. Allen, to prevent the saw from heating. He has used large saws for a number of years, but never found much difficulty in running them himself, but has found it difficult to get others competent to run them. He determined to find out the reason of the saws heating and cutting out of line. He says "the saw always heats near the teeth, causing it to expand on the outer edge, consequently it gets slightly twisted and thereby incapable of sawing straight. The cause of the heating is the saw-dust getting between the saw and the timber." He has found a remedy. He cuts slits about 1-16th of an inch wide and eight or nine inches towards the centre, from the root of the teeth; about six slits cut in the saw at equal distances apart answers. This gives room for the expansion of the metal and keeps the saw from winding.

An Ancient Sword.

The sabre worn by Count Pulzsky, at the Bar Festival, on Friday evening, December 19, was made in 1592. It originally belonged to Sultan Mahomoud, was once owned by Napoleon, and finally passed into possession of the family of Count Pulzsky. The blade, which is of formidable dimensions and of the finest temper, bears the date of its manufacture, and is covered with Arabic inscriptions. The mountings are of massive gold, and the scabbard of black cloth. It looks as if, in trusty hands, it might yet do good service.

Fire at the Capitol.

On Wednesday last week, the main Library at the Capitol, Washington, took fire and 35,000 volumes were consumed. The great majority of these were in MSS., and, it is stated, they cannot be replaced. We always regret to hear of the burning of books and manuscripts, and we greatly regret this one. It is to be hoped that more care will be exercised for the future in protecting the works which escaped the conflagration.

Besides the books, a number of superior paintings, hanging around the library walls and between the alcoves, were included in the destruction. Of these we can call to mind Stuart's paintings of the first five Presidents; an original portrait of Columbus; an original portrait of Peyton Randolph; a portrait of Baron Steuben, by Pyne, an English artist of merit; one of Baron de Kalb; one of Cortez; and one of Judge Hanson, of Maryland, presented to the library by his family. Between eleven and twelve hundred bronze medals of the Vattemare exchange, some of them more than ten centuries old, and exceedingly perfect, are amongst the valuables destroyed.

Nickel.

Nickel is a silver-like metal, sp. gr. 8·9. It is magnetic, and is greedy of oxygen, forming gray protoxide and black peroxide. Heat will not oxidate it because it drives off oxygen as fast as it fixes; but the oxides are formed by solution in nitric acid, precipitating by potash, and then heating to redness. It is usually associated with cobalt; it is always present in meteoric stones; in the Harz Mountains it is associated with copper, as kupfernickel ore; with arsenic and iron, as arsenic-nickel. It also exists as an oxide, a sulphuret, and an arseniate, in gneiss, mica slate, and sienite.

The chief of these ores, and that from which most of the nickel of Conemera is obtained, is the copper-colored ore above described as kupfernickel—nickel being a term of detraction used by German miners, who expected from the color of the ore to find that it contained copper. The salifiable oxide of nickel consists of 30 nickel+8 oxygen. Its salts are mostly of a grass-green color, and the ammoniacal solution of its oxide is deep blue, like that of copper. Ferrocyanate of potassa precipitates it of a white or very pale green color.

Since the manufacture of German silver, or argentine, became an object of commercial importance, the extraction of nickel has been undertaken upon a considerable scale. The cobalt ores are its most fruitful sources, and they are now treated by the method of Wohler to effect the separation of the two metals. The arsenic is expelled by roasting the powdered speiss first by itself, next with the addition of charcoal powder, till the garlic smell be no longer perceived. The residuum is to be mixed with three parts of sulphur and one of potash, melted in a crucible with a gentle heat, and the product being edulcorated with water, leaves a powder of metallic lustre, which is a sulphuret of nickel free from arsenic; while the arsenic associated with the sulphur, and combined with the resulting sulphuret of potassium, remains dissolved.—Should any arsenic still be found in the sulphuret, as may happen if the first roasting heat was too great, the above process must be repeated. The sulphuret must be finally washed, dissolved in concentrated sulphuric acid, with the addition of a little nitric; the metal must be precipitated by a carbonated alkali, and the carbonate reduced with charcoal.

In operating kupfernickel, or speiss, in which nickel predominates, after the arsenic, iron and copper have been separated, ammonia is to be digested upon the mixed oxides of cobalt and nickel, which will dissolve them into a blue liquor. This being diluted with distilled water deprived of its air by boiling, is to be decomposed by caustic potash till the blue color disappears, when the whole is to be put into a bottle tightly stoppered, and set aside to settle. The green precipitate of oxide of nickel, which slowly forms, being free by decantation from the supernatent red olution of oxide of cobalt, is to be edulcorated and reduced to the metallic state in a crucible containing crown glass. Pure nickel, in the form of a metallic powder, is readily obtained by exposing its oxalate to moderate ignition.

Since the application of Liebig's cyanide of potassiunm to the separation of metals in a mixed solution, the foregoing mode is generally given up for the use of cyanide. A solution of cyande of potassium is added to the mixed oxide, and heat applied. The cyanide must be quite free from cyanite. The solution is boiled to drive off excess of acid. Peroxide of mercury is then added to the solution, when the nickel is precipitated, partly as oxide partly as pure metal; it is then collected dried, and being calcined at a red heat, leaves the oxide perfectly free from cobalt.

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For the Scientific American.

Pneumatics.

We derive most of the names used in the sciences from the Greek; and the root of the name of this branch, which treats of aeriform bodies, is "Pneuma," which in the original signifies spirit, and was the name applied by the ancients to every thing invisible, yielding, and evanescent, and which they could neither confine in nor exclude from their rudely constructed vessels, but which still manifested its presence by its qualities, while it eluded the direct cognizance of their senses.

Pneumatics, then, is that branch of physics which treats of the properties of substances appearing in the condition of elastic fluidity; and though all solids may be reduced to this state by heat, yet most of them are so seldom the objects of observation in it, that the materials whose chemical and mechanical properties are usually described under the term pneumatics, are all included under the name of Gas, which comprehends all the invisible elastic fluids, either simple or compound, that are ponderable, and can be confined in limited space. And, as their compounds, Steam and Atmospheric Air, are the principal forms of gas, which exist naturally and can be easily procured in any quantities, and, as their mechanical properties are similar to those of all the rest, they are generally made the subjects of investigation.

The gases differ principally from solids and liquids, first:—In their great sensibility and easily yielding to the slightest pressure. Second:—In their elasticity, which is always equal to the compressing force. Third—In the great pertinacity with which they retain their latent heat, and to which they owe their gaseous state; and, fourth—In their inferior specific gravities.

If we try to move swiftly in water we encounter a rapidly increasing resistance; whereas the resistance of the atmosphere is almost imperceptible to all ordinary motions. But when the air moves with the celerity of the hurricane, its effects are often as terrific as those of a boisterous flood, showing that although it constitutes the gentle summer breeze, it can make up, by increased celerity, what it lacks in specific gravity, and commit equal devastation with an impetuous torrent of water.

Air and steam, like liquids, when compressed, press equally in all directions, with the same force. Indeed, if they did not, there would be a continual current towards the point of least pressure, exerting a force of nearly fifteen pounds upon every square inch; and we could no more resist this current of air, than we can now resist the current of a river of equal depth with the atmosphere, and flowing with a velocity as much less than that of the air, as the specific gravity of air is less than that of water.

To prove that air presses equally in all directions, compress between your hands a strong bladder filled with condensed air, and though the bladder yields, it will extend itself on the side on which there is the least pressure; and, if you puncture it, the air will rush from it in whatever direction the puncture is made, with the same force. This fact can be accounted for only upon the supposition that the particles of fluids and liquids are free to move among themselves, independent of the mass to which they belong.

Atmospheric air being one of the most compressible substances in nature, it is obvious that the atmosphere must be much more dense at the level of the sea than on the summit of high mountains; for the lower the stratum the higher, and consequently the heavier, is the superincumbent column that presses upon it; and experiments and mathematical reasoning prove, accordingly, that if the altitude above the level of the sea increases in arithmetical ratio, the difference between whose adjacent terms is seven miles, then the density of the atmosphere decreases from the earth's surface upwards, in geometrical series, whose ratio is $\frac{1}{4}$: thus—at the altitude of seven miles the air is $\frac{1}{4}$ as dense as at the surface; at 14 miles, 1-16; at 21 miles 1-64, etc. Humbold found that, on the highest peak of the Andes, he could scarcely exercise at all, because the air did not press into his lungs with sufficient force to enable him to breathe freely; and the blood-vessels became so much distended as to be ruptured in the mouth, nose, and ears of his companions. It is stated by the surgeons accompanying our army, that on the plains and in the city of Mexico, which are elevated 7,000 feet above the ocean level, consumption is scarcely known as a disease, probably because the Mexicans are necessarily in the habit of expanding their lungs, from infancy, to their utmost capacity, to inhale enough air to furnish sufficient oxygen and electricity for the uses of the animal economy; and thus their lungs gain sufficient strength to secure them against that fatal disease. Twilight ends about an hour and a quarter after sun-set, and begins an hour and a quarter before sun-rise, when the sun is nearly 18 degrees below our horizon; and were a tangent to the earth's surface drawn through the sun's centre, it would be elevated about 45 miles above us. Therefore, at this height, the air is too rare (thin) to reflect and refract the light of the sun.

From the preceding facts it is evident that the air is material, for it possesses all the essential properties of matter; and that it is an elastic fluid. To prove this still further, take a syringe with the piston drawn up, stop the tube air-tight, and then try to push the piston down, and you will soon find that there is a material and elastic substance in the syringe; for, though you can push the piston down some distance, and by so doing compress the air, the piston will recoil the moment you cease to press. To demonstrate the pressure of the atmosphere, stop the tube while the piston is down, so that no air can get into the syringe; and you will find that a very considerable force will be required to draw the piston up; and this force is proportional to the size of the piston; for the air outside of the syringe presses upon the upper side of the piston with a force of nearly 15 pounds to every square inch. The syringe must be bored true, the piston fit close, and be well oiled, to prevent the air entering beside the piston.

It has been proved, experimentally, that compressed air retains its elasticity for an indefinite length of time, and will expand when the pressure is removed, with the same force that confined it at first. Air is therefore perfectly elastic.

A vessel whose contents are 100 cubic inches, weighs nearly 30½ grains less, after the air has been exhausted (pumped out of it), than it did before; 100 cubic inches of atmospheric air, under the mean pressure of the atmosphere, therefore weigh 30½ grains.

H. R. Schetterly.

Howell, Mich.

[For the Scientific American.]

Remarks on Leather, Tanning, &c.

In No. 14 of the Scientific American, under the heading of "Recent Foreign Inventions," I see a Mr. James Pyke has taken out patents for extracting tannin, &c. Sixteen years ago I put up a steam engine in my tannery, and at the same time I built a vessel or tank (such we call it) which holds about 40 hogsheads, with the false bottom full of small holes, about four inches above the proper bottom—under this false bottom the end of the exhaust pipe from the engine is introduced, and we frequently boil the whole of the bark and liquid in from 4 to 5 hours, and generally let it cool in the leech. I don't think there has been a week in 16 years without this being done.

Of the rolling process, I presume if Mr. Pyke could have stepped into the rolling apartments of some of our sole-leather tanners, and have seen a man, with his foot, bring a roller on to leather varying from a few pounds to a few thousand pounds pressure, with a vibratory motion of from 70 to 100 per minute, he would not have racked his brain in contriving his india rubber and rings.

Of the boot and shoe pegging and nailing—about 40 years ago there were a great many boots and shoes made with nails in New England. The manner was thus:—the common wooden last was taken, a slab was sawn off the bottom from one-quarter to one-half an inch in thickness—this slab was sent to the foundry, a casting made from it, which, of course, would exactly fit the last; it was easily secured to the wood, and answered for clinching the nails when driven through the soles and uppers. Here in this climate, where the feet are often placed to the fire, the nails become more heated than the leather, and sometimes the leather was burned. The nailing process was soon abandoned. Then was introduced the screw peg for which, I believe a patent was granted; the screws made of hickory wood, with a slight thread cut like an iron screw, were made some feet long and cut off by the workmen of suitable length to suit the work they were used for. They were found somewhat difficult to drive, and expensive, and were soon abandoned. The present peg employed, every person is familiar with, and as evidence of the enormous quantity used, one house in Boston informed me they had sold, within the year, 3,000 bushels.

Probably Mr. Pyke may not think it for his interest to take out patents for his improvements in this country. H. Halsey.

Windsor, Ct., 1851.

Recent Foreign Inventions.

Incrustation of Boilers.—Mr. John Ashworth, of Bristol, recently obtained a patent for the following compound for preventing incrustations in steam boilers. The specification treats of the prevention of incrustation of steam boilers and generators, whether for marine or land purposes, by the introduction of a compound, which not only prevents any deposit, from the water becoming incrusted on the bottom of the boiler, but which also causes any deposit that may have adhered thereto previously, to become detached from the boiler-plate. In marine-boilers, the deposits principally consist of sulphate of magnesium and chlorate of sodium, while lime or other soluble earth form the deposit in boilers when fresh-water is employed. Incrustation is prevented by a compound of materials, consisting of coal-tar, linseed-water, plumbago or black-lead, and Castile or other soap, which is prepared and combined in the following proportions:—To thirty-two gallons of coal-tar add twenty-one gallons of linseed-water, which having been well mixed, five pounds of plumbago, or common black-lead, in a pulverized state, are to be added, and eight pounds of Castile soap. Although the patentee prefers Castile soap, common black soap may be used in lieu of it. These ingredients are to be mixed intimately together, so that the mass may be thoroughly incorporated, and will be of a creamy consistency, and then at once fit for use. This mixture is to be introduced into the boiler, after blowing off the steam in the proportion of about one gallon of the compound to a thirty-horse boiler, repeating it every three or four days, according to the nature of the water used in the boiler. If a great quantity of deposit results from the water used, the effect of the mixture will be attended with advantage by slightly increasing the quantity, or by repeating the dose at shorter intervals. The mixture may be introduced through the man-hole, although, to save trouble, a suitable apparatus may readily be adapted for the purpose, by simply opening a tap. Any incrustation that has hitherto accumulated, by the use of this mixture will become so loosened that it may readily be swept off from the boiler-plate, and removed, which will also be the case with any deposit that may afterwards take place in the boiler, these matters preventing its adhering to the metal, or even accumulating in solid masses, detached from the boiler. The linseed-water before-mentioned is prepared by boiling fourteen pounds of linseed by means of steam-heat, and afterwards straining and removing the seed and extraneous matter from the water.

Gas for Illumination.—Thomas G. Barlow and Samuel Gore, engineers, London, lately took out a patent for the following improvements in making gas:—

The patentees describe an arrangement of three retorts, &c., adapted for the purposes of their invention, in operating with which the retorts are, in the first instance, all charged with cannel or other rich bituminous coal, and the charges are worked off in the usual manner. The charge of the first retort is then withdrawn, and it is recharged with coal. The other retorts are not recharged, but the residue of the first distillation is left in them. Steam is now allowed to enter the third retort, where it will be decomposed by the incandescent coke, and converted into hydrogen, carbonic oxide, and carbonic acid gases, which, with any excess of steam, are conducted into the second retort. The excess of steam will, however, be condensed in its passage, and the gases will pass through the coke in the second retort, where the carbonic acid will become converted into carbonic oxide. The removal of the undecomposed steam in this manner is important, as it permits of the conversion of the carbonic acid into carbonic oxide in the second retort, which is not easily effected when an excess of steam is present. The gas passes from the second retort into the first retort, where it mingle with the rich gas from the fresh charge of coal, at the same time becoming itself carburetted by the bituminous products of the distillation of the coal. The whole of the gas then passes into the hydraulic main.

When the charge in the first retort is worked off, it is not withdrawn, but left in the retort, and the charge in the third retort is withdrawn, and it is recharged with coal. The steam is then allowed to enter the second retort, where it will be partially decomposed, and will then pass through the pipes and valves, where the excess of steam will be condensed, and the remaining gases will then pass over the coke remaining in the first retort as the residue of the first operation. The carbonic acid gas will thus be converted into carbonic oxide, and the mixture of carbonic oxide and hydrogen thus obtained will pass into the third retort, where it will unite with the hydro-carbons resulting from the decomposition of the fresh charge of coal, and the whole of the gas will pass into the hydraulic main.

In like manner, when the charge in the third retort is exhausted, it is not withdrawn, but allowed to remain in the retort, and the second retort is then emptied, and recharged with coal. The steam is then allowed to enter the first retort, where it is partially decomposed, and the excess of steam is condensed in its passage through the pipes and valves, and the gases will then enter the third retort, and unite with the gases and other products given off from the new charge of coal. The whole of the gas will then pass off into the hydraulic main. When the charge in the second retort is worked off, the first retort is emptied and recharged, as already described, and the operations thus follow one another in continual succession.

In this mode of operating, the residue from each charge in place of being immediately withdrawn and replaced by a fresh charge, is retained in the retort, and employed in the production of gases of small illuminating power, for mixing with the richer given off from the fresh charge which is introduced into another retort. This mode of treatment is applicable to ordinary coal, especially the richer or more bituminous sorts, cannel coal, bituminous shales or schists, asphaltes, lignites, resinous earths, and other similar substances or mixtures of the same. In place of employing three retorts, as above described, two may be employed, and in that case each retort is emptied and recharged when the charge in the other retort is worked off.

Another mode of conducting the process consists in employing a single retort, each half of the length of which is charged alternately, when the charge in the other half is exhausted, and the steam is always admitted at the end containing the exhausted charge, and the gases allowed to pass off to the hydraulic main from the opposite end of the retort. The steam is thus decomposed by the exhausted charge, and the resulting gases unite with those evolved from the fresh charge.

In place of employing a long retort, and charging it alternately at each end, a shorter retort, furnished with a partition or diaphragm, may be used, and each compartment may then be charged alternately, when the charge in the other compartment is exhausted.

A Small Great Spy Glass.

We see it stated in some foreign papers, that a spy glass has been exhibited in London of no greater diameter than a wallnut, yet so powerful that the lineaments of a person's face can be read by it at the distance of a mile and a half. It weighs only one and a half ounces, and can easily be carried in the pocket of a gentleman's vest. We hope some of our opticians will go to work and construct like telescopes, so that we may have the pleasure of carrying such a handy instrument continually about our person.

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NEW INVENTIONS.

Olds' Revolving Coat Holder.

Mr. Wm. B. Olds, of West Meriden, New Haven Co, Ct., has invented and taken measures to secure a patent for a good improvement in apparatus on which to hang coats or other garments. The improvements consist in the employment of a bracket, which may be secured permanently in any suitable place, and upon the end of which bracket is secured a pivot, which has a thread cut on a portion of it to receive a nut to work thereon. On this pivot is secured a revolving bow or *form*, which preserves the shape of coats or other garments hung thereon for exhibition, &c. This Revolving Bow, with coats or other articles of apparel on it, enables the proprietors of clothing establishments to exhibit them in their most proper positions, and to show the same to their customers. This form also combines the excellent quality of maintaining the symmetrical shape and appearance of the articles suspended on it.

Improved Hold-back for Sleds.

Mr. Perry Dickson, of Blooming Valley, Crawford Co., Pa., has invented and taken measures to secure a patent for a good improvement in sleds, which consists in attaching hold-back dogs rigidly to the roller, and connecting the tongue to the dogs, or to the roller by hinge joints, in such a manner that the stoppage or backing of the team will turn the roller back and drive the dogs into the ice or snow, while drawing the sled will raise them. The claim is for the combination; the stopping or slacking of the draft, when there is head-way on the sled, causes the roller to turn over backwards, and force the hold-back teeth into the ice or ground, forming a toothed drag or hold-back of great service in going down declivities.

Improved Horse Rake.

Mr. George Whitcomb, of Greenwich, Fairfield Co., Ct., has invented and taken measures to secure a patent for an improvement in Horse Rakes. The improvement relates to a superior manner of operating the rake head, which is a revolving one with spring teeth. By a combination with a lever, stirrups, and the rake head, arranged conveniently to be operated by the driver, the teeth of the rake are worked in a superior manner, so as to elevate and depress them at the proper periods to do so, to gather up and discharge the hay while raking it up into winrows, &c.

Machinery for Making Hay and other Agricultural Forks.

Mr. William Robinson, of Highgate, Franklin Co., Vt., has taken measures to secure a patent for improvements in machinery for making forks for agricultural purposes, and which relates to making forks with two, four, or more tines, from one piece of metal. The improvement consists in a certain combination of devices, in the same machine, for rolling down the piece of metal ready for splitting it to make the tines and for drawing them out and shaping them. The improvements in the machinery invented by Mr. Robinson produce superior hay and manure forks, more economically than by the machines at present in use for manufacturing such articles.

Improved Excavator.

Mr. Anthony Frasier, of Montezuma, Cayuga Co., N. Y., has taken measures to secure a patent for an improvement in Excavating Machines, which consists in arranging the chains, and securing the buckets thereon in a peculiar manner, by which arrangement the ways, to which the drums are attached, do not come in contact with, or bear against the sides of the cut made by the buckets. The buckets extend some distance over the chains on each side, sufficiently so to scoop out a space greater in width than the ways, consequently the ways or frame over which the chain and buckets move, may be depressed, and the buckets lowered as fast as the earth is excavated.

Measures for California.

The bill to establish a Branch Mint of the United States, in California, passed the Senate on the 16th inst. On the 18th, Senator Gwin introduced a bill for granting the right of way to aid in the construction of a line of telegraph from the Mississippi river to the Pacific Ocean.

MACHINE FOR MEASURING AND CUTTING IRON.

The accompanying engravings represent a machine for measuring and cutting iron, invented by Levi B. Griffith, of Honeybrook, Chester Co, Pa., for which a patent was granted on the 4th of last November.

Figure 1 is a perspective view of the machine, made of cast-iron, and the measuring wheel placed in a horizontal position. Fig. 2 is a side elevation, with the casing removed, to show the spring and crank. Fig. 3 is a perspective view of the same device, made of either cast or wrought iron, and the measuring wheel placed in a vertical position. The same letters refer to like parts.

A is an iron bed plate, cast with a raised socket, B, and vertical standard, C, thereto; this plate has holes for screws or nails near its outer edge, by which it can be secured to any convenient place. Figure 3 is so constructed that it may be placed on the ordinary anvil and removed at pleasure. D, fig. 1 is a vertical case, on the top of which is a circu-

Figure 1.

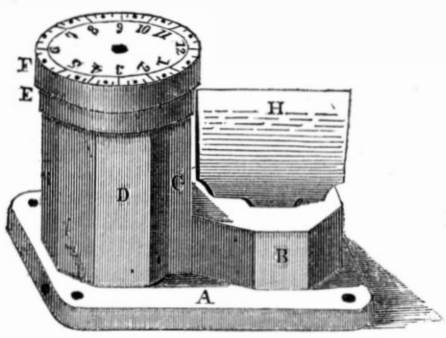
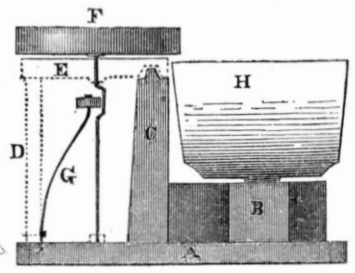
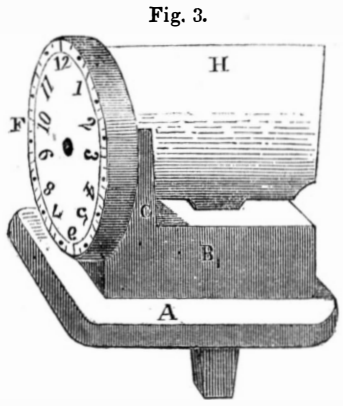


Figure 2.



lar horizontal plate, E, cast thereto, and projecting on all sides from the case, and over the standard, C, to which it is secured by a tenon, the lower end of the case, D, rests on a portion of the bed-plate, and is secured to it by a tenon, and is so arranged that it can be removed at pleasure. F is a measuring wheel, placed horizontally on the top of the vertical case, D, immediately over the circular plate, E: around the face of this wheel, F, there is a scale near the periphery (marked in the usual way) so as to indicate the inches around the periphery of the wheel; this wheel, F, is secured to a shaft which passes down through the circular plate, E, into the inside of the

Fig. 3.



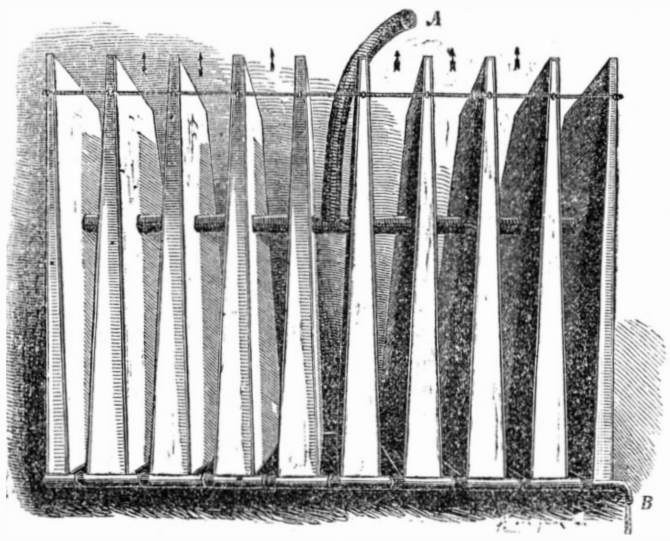
vertical case, D, having its bearing in the centre of the circular plate); part of this shaft is bent in form of a crank, as shown in fig. 2, against which a friction roller and spring, G, is made to bear, the spring being secured to the inside of the case; this spring and crank causes the measuring wheel, F, to settle with the starting point of the scale always in a right position to commence measuring; (in fig. 3 the lower part of the measuring wheel is weighted, which is equivalent to the spring). H is a vertical cutter made of steel and placed in the socket, B, of the bed plate, the cutting edge of which is horizontal. and stands close to the lower edge of the measuring wheel, F, when placed in a horizontal position.

By placing the iron to be measured on the cutting edge of the cutter, H, and moving it forward, pressing it gently against the periphery of the measuring wheel, F, causing it to rotate, the number of inches the iron has moved, will be shown by the scale on the face of the wheel, and the iron will be in a proper position for cutting or marking to any desired length.

This invention will be found of great practical utility to smiths, and others who work in iron, by having the measure always at hand, and the scale ready to commence measuring; thus affording the operator a speedy and convenient mode of measuring, without being required the trouble to lay down his hammer and take up and place his rule to measure, and then lay down his rule and take up his hammer to cut off. Much time and inconvenience will be saved by this invention; cheapness of construction, simplicity, strength, and durability are also combined in this arrangement.

More information about rights, &c., may be obtained by addressing as above, to Honeybrook Post Office, Chester Co., Pa.

PATENT HEAT DISTRIBUTOR AND VENTILATOR.



The accompanying engraving represents a Heat Distributor and Ventilator, for which a patented was granted to the inventor, Mr. J. K. Ingalls, of Williamsburgh, L. I., on the 4th of Nov. 1851.

The attention of scientific men has been much turned, of late, to the discovery of some method of warming and ventilating by means of surfaces moderately heated, and which, at the same time, should be practically economical. Great numbers of hot-air furnaces have proved failures, so far as a healthy atmosphere is concerned, to say nothing of their unsightly and inconvenient arrangements, and the danger from fires, of which they are becoming a prolific cause. They are fatal to plants, and are not equally so to persons only because the latter have opportunities of changing their position and of obtaining fresh air from without; and they are only tolerated, because no better plan is known, which does not involve an enormous expense, without diminishing the inconvenience. Hot water furnaces are so expensive as to be out of the reach of most persons, while the arrangement cuts up and disfigures a house even more than for hot air.

Steam, as heretofore employed, is subject to several objections: it requires pressure, which would involve danger. It requires much space to expose the surface, and hence is inconvenient, and disfigures the appearance of any room; and more than all, it affords no opportunity for the introduction of fresh air in contact with the heating surface, but creates a stifling and sickly atmosphere, highly injurious to health.

The engraving represents a radiator, constructed with reference to these well known defects in methods previously in use, by a man practically acquainted with this subject; and the public will decide how far he has overcome those difficulties. A series of very thin chambers, supplied with steam from any boiler through the pipe, A, are compactly arranged, so that in a space of two cubic feet as much surface is contained, as one hundred and fifty feet of 1¼ inch pipe would furnish, and yet, in consequence of the peculiar form, it is much more favorably disposed for contact with the air, than any arrangement of pipes can possibly be. The surfaces are made to recede from each other upward, or in the direction where the current is desired. The cold air, being introduced where the spaces between the chambers are narrowest, is allowed to expand as soon as it comes in contact with the heating surface. The receding forms act like a wedge on the expanding air, which continues to arise and expand, and is thus brought in contact with, and absorbs the heat from the surface.

With such rapidity does this arrangement condense the steam, and consequently heat the air, that no pressure is required, and the pipe, B, which carries back the condensed water, having an opening to allow the superabundant steam to pass off through some convenient flue, no explosion or collapse can by any possibility ever occur. Hot water can be used if preferred.

These Radiators can be placed in hot air chambers, or in the several apartments to be heated, in the fire places, base blocks, closets, pedestals, or under the floors, and be supplied with vapor by an inch pipe, which can be placed in the walls, partitions, or under the floors, with the same facility as gas or Croton pipes, without danger or injury to the house. The quality of heat will be preferable to that from the best hot-water furnaces, as no part of the surface will be heated above 212°, and the expense will be about one-fourth as much, while not more than one-half the fuel will be required.

In steam vessels they will not only heat and ventilate any desired parts but also supply a quantity of fresh water, without any trouble of pumping cold water over a condensing apparatus. It is also capable of application on a small scale, as an attachment to a caboose, range, or cooking stove.

The claim of the patent will be found on page 70, this volume Scientific American. It claims the tapering form of radiating surfaces, and embraces a wide field in heating apparatus. More information may be obtained by letter addressed to Mr. Ingalls.

Adhesion on Rails.

We have been informed that on some of our railroads they have adopted the most simple and cheap method of creating adhesion of the driving wheels on the rails, that we have ever heard of. If there is any grease on the rails, or if they are wet, or in pulling large trains of cars, it has been found difficult, many times, to start the trains after stopping, in consequence of the locomotive slipping. Hence it has been necessary very frequently to throw sand on the track. This has been remedied by running a copper pipe, immediately in front of the wheels, through which the engineer can, at any moment he finds the wheels slipping, discharge a quantity of sand.

We see it stated in some of the papers that the proprietors of Bain's Patent and Bain's Lines, have sold out to Morse & Co. for $83,000, to be paid in stock.

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Scientific American

NEW-YORK, JANUARY 3, 1852.

Progress of Discovery During 1851.

The year 1851 has not passed away without leaving a deep impress on the present age.

The results growing out of the events which have transpired, and which will yet grow out of them, cannot be estimated in amount or circumscribed by any period of time. The grandest event, so far as it relates to science, art, manufacturers, and all industrial products, which has ever taken place since the world began, transpired during the past year; we allude to the Great Exhibition. The benefits of the World's Fair, will go out to the end of the earth, among all nations, and kindred, and tongues. Much important information was presented to our readers through our columns, by our London correspondent, relative to that great congregation of artisans and philosophers; still the Exhibition was too vast for any person to do justice to it—yea, justice never will be done to it. We expect that the inventive genius of thousands in our land and other lands has received a great impetus, and that great numbers of useful inventions, as the result of that impetus, will soon be coming to light.

A great number of very useful inventions were presented to our readers during the past year, and all the most important discoveries have been noticed and described and many of them illustrated. The first engravings we presented to our readers in 1851 were Hutchinson's machines for manufacturing barrels: McCormick's grain reaper, that agricultural machine which has created such a sensation in the Old World, was illustrated and described on page 164 of our last volume.

A series of very important articles, illustrated with views of the Patent Office, were published by us, and a reference to them will at any time repay those who are interested in that subject. The best article on the American locust,—"Cicada Septemdecim," ever published in our country, by Dr. Smith, was published on page 212, last volume. A series of very useful articles on water wheels, was also published by us. We have also published illustrations of the patents of two inventions which have perhaps made more noise in the world last year than all others; we allude to "Paine's Light," on page 249, last volume, and the Annihilator, page 1, this volume. We have endeavored to present all new and interesting inventions to our readers, and these inventions are as much a part of modern history now, as that of a seige or a battle, and perhaps more so.

We also published some views of "the pendulum experiment," and a number of articles on the same. This subject created quite an excitement, and all the philosophers in the world marched out and spoke grandly on it. It now appears to have been a discovery of evanescent worth. When we think of all that was said about the pendulum, and how quiet every thing is now about it, we confess that philosophers by their silence seem to give force to those who spoke against it and called it "a philosophic *ignis fatuus*."

Along with many very useful inventions presented by us during 1851, our readers will not forget how we pointed out the utter worthlessness of some schemes which, but for our warning voice, would have deceived many. We do not name these just now, we merely allude to them, and the reason why we have written this article at all, is to make our readers lift up their back numbers and take a retrospective view of what has been done in science and art during the past year. It is not possible for us to name all the machines we have for the first time introduced to our American public during 1851, but we wish our readers to make an examination for themselves, and they will see much to cheer us in the progress of discovery. Over nine hundred American patents were granted, all the claims of which we have published. We expect that 1852 will be a brilliant year for discoveries and inventions. We are perhaps on the verge of an era of discovery, which will throw all the past into the shade. When the past is so full of wonders, who can have a doubt of the future. A great deal has yet to be done in every department of science and art, and while there is anything to be done, our inventors must be progressing and striving to gain the prize.

A World's Fair and Crystal Palace at New York.

A short time since Mr. Riddle, our Commissioner to the World's Fair, and some others, petitioned our Common Council for permission to erect, in Madison Square, this city, a building of iron and glass 600 feet long and 200 feet wide, for an Industrial Exhibition of all nations. The petition was referred to a special committee, which reported favorably on the subject, and on Tuesday evening of last week their report, with the following resolution, was adopted:—

"Resolved, That the free use and sole occupation of Madison-square be, and the same is hereby granted to Edward Riddle and his associates, for the term of two years from the date of the adoption of this resolution, whereon to erect a building of iron and glass, for the purpose of an Industrial Exhibition of all nations, in pursuance of the petition annexed, provided that said Riddle and his associates will enter at once into an agreement, with sureties, with the City, through the Controller, that they will, during said time, erect around said square, at their own cost and expense, and at the cost of not less than six thousand dollars, under the superintendence of the street Commissioner, a good, strong, handsome and sufficient iron railing with the necessary gates, &c., similar to the railing around Washington Parade Ground, or of a patern to be approved by the street Commissioner, which shall be the property of the Corporation after the expiration of the said term hereby granted, and to restore said ground to its present condition, and to take every means to preserve the trees, &c., therein, and provided also that the price for admission to said building for individuals shall at no time exceed 50 cents."

Some of the members of the Board of Aldermen—Aldermen Miller and Shaw—boldly and sensibly opposed the measure; they thought it should be a government project, national and great in character, and one to which the world should be invited. The action of the Common Council we hold to be foolish and flagrant. If the project is carried out as proposed, it will disgrace us in the eyes of the whole world. Here, in our great Republic of 24,000,000 inhabitants, we are to have a World's Fair directly on the heels of the London one—and such a Fair, a small and ridiculous copy of the Crystal Palace. The fact is, a lot of speculators who have not souls for their country above buttons, intend to make a fine speculation out of such an affair. It is evident that the glory of their country is measured by three cent pieces, and the price of andirons. We want no such exhibition in this city, nor in our country. We would rejoice and be glad if a World's Fair, broad and national, not under the management of auctioneers and stock-jobbers, would be held in our country. We should like such an affair to be great and grand, and superior, if possible, to the London Fair,—but this small-potato contemplated crystal palace, will make us the laughing-stock of all nations. The Common Council, had no business to make such a grant as it has done to a private individual or individuals, and it should not have made it. The project is one worthy of pedlars without national pride; and if this was the spirit which managed our department at the World's Fair, we cannot feel too deeply for the fame of our Republic. The matter, however, is not finally settled. The new Corporation will probably annul the grant, as they should do. It is a shame to find men under the guise of a kind of patriotism, endeavoring to make money out of public exhibitions, personally all for themselves, but professedly all for the public. The Crystal palace, in London, was 1800 feet long; when America builds one for a World's Fair, it must be one or two hundred feet longer, not your miserable squirrel cage of 600 feet, only one-third that of the one in Hyde Park.

When speaking of this affair again, if we have to do it, we must call it Riddle & Co.'s Fair, not the "American," nor the "World's Fair." When we have a World's Fair, we don't want the building to be a slavish copy after Paxton's, but a new and original design.

Oxalic Acid.

This acid is very extensively used at the present time, in comparison to what it was a few years ago. It is an acid which may be produced by the action of nitric acid upon most vegetable substances, and especially from those which contain no nitrogen, such as well-washed sawdust, starch, gum, and sugar. Sugar is the article generally employed, and possesses many advantages over all others. The process of making it consists in employing small earthenware jars, into which the nitric acid is poured upon the sugar. The jars are placed in water baths. Five hundred weight of saltpetre, and two and a half cwts. of sulphuric acid generate enough of nitric acid to make 140 lbs., of oxalic acid. About 120 lbs. of common brown sugar is the quantity of that substance employed along with the nitric acid. Nitric oxide and carbonic acid gases are evolved by the action of the nitric acid on the sugar. Great care must be exercised to keep the jars as cool as possible, for if nitric acid is boiled upon sugar, as recommended in many chemical works, to produce oxalic acid, the most of the oxalic acid produced under the high temperature will be peroxidized, and pass off as carbonic acid. It is, therefore, very easy to make a losing business of manufacturing this acid.

Oxalic acid has a great affinity for iron, and acts very mildly upon textile fabrics; it is, therefore, the best acid known for taking out iron spots on straw hats, and it is exclusively used for this purpose by those who are most skilled in cleansing and bleaching straw hats. It is the best acid for taking iron spots out of linen, and for this purpose it is now used in a great number of families. The acid is in fine crystals, almost like common epsom salts. A few crystals of it are laid upon an iron stain on a shirt, and warm water poured on them until the crystals are dissolved: the iron spot quickly disappears. The bleachers of straw keep a vessel containing a solution of oxalic acid, about the strength of 3° Twaddle's hydrometer: in this the straw hats are immersed for about half an hour, when they are taken out and dried. Oxalic acid is now used in many families for scouring brass, such as door knobs, &c.: it should never be used for any such purpose. Oil and rottenstone are the best substances known for cleaning brass. Brass cleaned with the acid very soon oxidizes afterwards. This acid is a poison, and should be kept out of the way of children. If taken by mistake, a good antidote is magnesia, or common chalk, which should be swallowed as soon as possible afterwards.

Synthetic Chemistry---Ultramarine.

There are two very distinctive processes in chemistry, viz., analytic and synthetic; the former takes a quantity of matter and resolves it into its original elements; the latter takes those original elements, combines them together and makes up the resolved quantity of mater into its first form and quality in every sense. It may be supposed by many that if a chemist can resolve any quantity of matter to its original elements—analyse it—he can easily combine them by synthetical chemistry. This has been done in many instances and with many compounds. Water can be thus treated but many substances elude the genius and skill of the chemist to treat synthetically. The laws of synthetical chemistry are not so well understood as those of analysis, and perhaps never will.

In no single instance has chemistry witnessed a greater triumph of synthetic skill, than in the formation of lapis lazuli. This mineral had been known and used by ancient artists away back in the days of Egyptian and Grecian glory, and it had come down as the most beautiful azure color ever discovered. It remained unchanged by exposure to air or fire, and it maintained its sky blue brilliancy on the canvas, undimmed for centuries. This mineral was very dear, and previous to 1820, it was all obtained in China and Siberia. At the time mentioned, common ultramarine sold for 35 dollars per ounce, and the best quantity for upwards of $100 per ounce. This substance was analyzed and was found to be a compound of silica, alumina, sulphur, and soda, with a trace of iron. These were colorless substances, and for a long time the coloring principle eluded the grasp of the chemist. At last M. Guimet, a chemist of Lyons, in France, devoted his attention exclusively to try and make artificial lapis lazuli—ultramarine. He was encouraged by the offer of a reward of 6,000 francs by the Society of Encouragement in Paris. He gave up the idea of searching for a hidden coloring principle and tried experiments with colorless substances. He succeeded, and for a long time kept his secret, and sold his ultramarine at $11 per pound. The process was afterward discovered by other chemists in Paris, (Gmelin and Robiquet) who published the mode of making it. This beautiful pigment is now sold as low as a few dollars per pound, and a quality as good as the second quality of the old lapis lazuli, which sold for $35 per ounce, can now be purchased for a few shillings per pound. Mr. Guimet was an exhibitor at the Great Exhibition and was awarded a Council Medal for his useful discovery. He states that it may be made by rapidly igniting a mixture of equal parts of silica, carbonate of soda, and sulphur, adding a sufficient quantity of the solution of soda to dissolve the silica. The result of this is a bluish green mass, which when burned in the air becomes the beautiful azure ultramarine.

End of the Annihilator.

Since the Annihilator was annihilated by the green hemlock cottage, in 84th street, as described in the last number of the Scientific American, Mr. Phillips published a card, in which he asserted he was *felled down*, and that a mob forcibly took possession of his apparatus and himself, and burned down the building before he had time to make his final experiment. This has been most emphatically contradicted by the committee named in our former article. They did not see Mr. Phillips knocked down; and the crowd behaved well; and along with them, we must say—and we were eye-witnesses—that Mr. Phillips's statements are incorrect and unwarranted. We early took occasion to point out the inutility of this invention—even before there was any public excitement on the subject; our reasons for so doing are before the whole community, and they all now say our predictions about its worthlessness have all been fulfilled. The whole press in this city has spoken out in the matter, and concur in our views. The Journal of Commerce has distinctly pointed out the obligations of the public to the opinions we had expressed, and the information we presented on the subject. The time has gone by—it is not now as it was at one time—for scientific (pretension, only) humbugs to delude the people. An intelligent press, devoted to such subjects, cannot be gulled nor bridled.

It will always be our duty to watch with Argus eyes the interests of the people, as connected with all such schemes.

Patents, Inventions, &c.

Our readers will bear in mind that we still continue to prepare specifications and drawings, and attend to prosecuting inventors' claims at the Patent Office, and also in all foreign countries. We have every facility at command, and constantly employ a large corps of able Examiners. Inventors who employ us are not subjected to delay in having their cases promptly presented. We have our business so systematized that but a week or ten days is generally required before the papers are ready for execution.

Petition for Extension of Patent.

On the petition of Ira Wing, of Belfast, New York, praying for the extension of a patent for sawing eaves and troughs for conducting water from buildings, &c., for seven years, from the expiration of said patent, which takes place on the 17th day of March, A. D. 1852.

It is ordered that the said petition be heard at the Patent Office on Monday the 1st of March, 1852, at 12 o'clock M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specifically set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing, must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

THOS. EWBANK, Com. of Patents.

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☞ Reported expressly for the Scientific American, from the Patent Office Records. Patentees will find it for their interest to have their inventions illustrated in the Scientific American, as it has by far a larger circulation than any other journal of its class in America, and is the only source to which the public are accustomed to refer for the latest improvements. No charge is made except for the execution of the engravings, which belong to the patentee after publication.

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING DECEMBER 23, 1851.

To Wm. Ball, of Chicopee, Mass., for improvements in Pumps for elevating water mixed with mineral substances.

I claim the improvement by which the waste auriferous or earthy water, that leaks out of the shaft hole of the case, is saved and returned into the body of the case, and the wear of the shaft hole of the chamber prevented, the said improvement, consisting in the chamber, the wheel, and the passage, as combined together connected with the case and shaft of the fan wheel, and made to operate substantially as specified.

To Wm. L. Bass, of Boston, Mass., for improvement in Chronometric Locks.

I claim the manner of disengaging the drop lever from the notch of the bolt, from the outside of the partition when the clock is stopped, and preventing the same from being effected when the clock is in motion by means of the lifting screw in combination with the forked lever, swinging loop, and ratchet wheel, substantially in the manner described.

To Newell Wyllys, of South Glastenbury, Conn., assignor to Charles Collins, & N. Wyllys, of Hartford, Ct., for improved machine for making Leather Tubes.

I claim, first, the method of forming the blanks or sheets of the proper size and form for tubes, from leather or other suitable material, by means of the movable and stationary nippers and inclined knife, or the equivalents thereof, operating automatically, substantially as set forth.

Second, I claim the method of forming flexible tubes from prepared sheets or blanks, by means of fingers, clamps, and cement, or their equivalents, acting substantially as set forth, to bring the edges of the sheet into contact and to unite the same.

Third, I claim combining in a single machine, the operations of forming the leather or other material, into blanks, bringing the edges of the same into contact, and uniting them, so as to form a tube at a single operation, substantially as set forth.

Fourth, I claim the clamp by means of which the material is held and upon which it is formed into a tube, constructed and operating in such manner that it shall, in addition to its movements towards the other clamp, also have a longitudinal movement to withdraw from the finished tube, substantially as described.

Fifth, I claim the combination of the reciprocating diverging fingers with the reciprocating converging plates, or their equivalents, by whose action the fingers are made to seize the sheet of material, substantially as set forth.

Sixth, I claim the method of coating the edge of the sheet with cement by means of a roller or its equivalent, which receives the cement and applies it to the edge to be cemented, substantially as set forth.

Seventh, in combination with a clamp or its equivalent for supporting the edges of the sheet of material to be united, I claim a reciprocating pressing iron, actuated substantially as set forth, to press the edges together, and to set the cement.

To Perry G. Gardiner, of New York City, for Rotary Swaging Machines.

I claim the compressing, drawing, swaging, or working into shape, wrought iron car wheels and other metallic discs or swedges, suitably shaped, one of which is forced towards the other, while it, at the same time, revolves on its own centre, its axis of revolution being the same as that of the disc which is acted upon, the other die being either stationary, or having a revolving motion in an opposite direction to that of the first mentioned die, and with the same axis of revolution, the said two dies or swedges, operating substantially as described, and being moved by any competent arrangement of machinery, substantially as described.

To Julius Hotchkiss, of Waterbury, Conn., assignor to the Hotchkiss & Merriman Manufacturing Company, of same place.

I claim the fastening of those different parts of a suspender to each other, which require a permanent fastening by a metallic clasp or clamp, substantially in the manner described.

To Willis Humiston, of Troy, N. Y., for improvement in Candle-Making Apparatus.

I claim the employment of gripers for griping the wicks, drawing and suspending the candles on the frame above the moulds, by means of spring bearings by which the gripers are securely held and suspended until the next series of candles are moulded when those suspended are cut from the wick and removed in the manner described.

To G. W. Ingalls, of Concord, N. H., for improvement in Æolian Attachments.

I claim the combining with the valve stem or rod, a movable bar, or any equivalent mechanism, by which such valve stem, or the head thereof, whenever desirable, may be moved out of action with the key lever, for the purpose essentially as described.

To Lewis King, of Madison, N. Y., for improvement in Carriages.

I claim the employment or use of the chain and pulley, in combination with the dogs and slide bar, constructed and operating in the manner and for the purpose substantially as set forth; the lower ends of the dogs being raised or depressed by means of the levers (four) operated upon by the square or loop, or any other equivalent device, and the slide bar attached to or detached from the pole by means of the levers and pawl, operated upon by the bent lever, or their equivalents.

To Jno. McLain, of Circleville, O., for improvement in Harness Saddles.

I claim the sliding gauge hinge boxes, attached to the pads, so as to adjust the width of the saddle by the screws, substantially as described.

I also claim the manner of attaching the sliding gauge hinge boxes to the pads, by means of the housing between them and the top of the pad, and the set screws passing through the plate and top of the pads, substantially as set forth.

To S. D. Nims, of Palmer, Mass., for improvement in method of hanging Window Sashes.

I claim the manner described of arranging and securing window sashes in their frames, by means of grooves in the sides of the window frame that receive the edges of the sashes (or by projections from the sides of said frame or casing, that fit into grooves in the edges of the sashes), and by making one or both sides of the window frame or casing movable and elastic, by means of the springs or their equivalents.

To J. M. Patton & W. F. Fergus, of Philadelphia, Pa., for improvement in Cutters for Planing Machines.

We claim the constructing of a cutting instrument for operating upon lumber, of one or more elliptical-shaped saw or saws, placed upon an arbor, in positions so oblique to the direction of its axis, as to bring every portion of the periphery of said saw or saws, into the same perpendicular distance from the said axis of their arbor, by which the teeth of the said saw or saws are made to perform a combined rotary and laterally reciprocating cutting action in the same circle of rotation, substantially as set forth.

To James Renton, of Newark, N. J, for improvement in apparatus for making wrought-iron direct from the ore.

I claim the arrangement of a series of flat vertical tubes, or the equivalent thereof, in a vertical stack, substantially as described, when these are combined with a puddling or other furnace, as described, by means of an interposed ore box substantially as, and for the purpose specified.

I also claim combining with each of the deoxydizing tubes, as described, and at the middle and near the lower end thereof, a double inclined plane, substantially as described, to insure the equal descent of the charge of ore as described.

And I also claim, in combination with the series of the oxydizing tubes and the ore box, substantially as described, the employment of a series of adjustable inclined planes, substantially as described, to regulate and insure the equal discharge of the ore from each and from the whole series of tubes, as described.

To T. E. Shull, of Lewistown, Pa., for improvement in method of Setting up Ten Pins.

I claim attaching the pins to a disc or plate, by means of cords, in combination with the adjusting screen and guide screens, by which the pins are properly adjusted or set up on the alley, upon raising and lowering the disc or plate, as described, the disc or plate being operated by means of the cord passing over the pulleys and around the wheel, power being communicated to the shaft or by any other mechanical means.

[See Eng. on page 76, this Vol. Sci. Am].

To T. J. Sloan, of New York City, for improvement in machines for Counting Screws and Pins.

I claim the cylinder or wheel, formed with recesses in its periphery for the reception of the screws or other articles to be counted, and provided with a groove for the reception of and in combination with the detector, to indicate, mark, and register the number of screws or other articles that are delivered, the whole being constructed and made to operate as specified.

For improvements in Bolt-Heading Machines.

I claim the combination of the upsetting punch, the dies for shaping the sides of the head, the levers for working the dies, and the protuberance on the punch stock for actuating the levers, so that by the forward movement of the punch stock, the punch is caused to upset the end of the bolt, and by its retrograde movement the dies are worked, which give shape to the sides of the head, as set forth.

[By a mistake, the name of the patentee was left out of this list; it will probably be sent to us next week.]

To R. S. Tucker, of Brooklyn, N. Y., for improvements in Spinning Rope Yarns.

Spinning rope yarns upon bobbins having a movable head or heads, so that the yarn can be packed lightly upon the bobbin, in spinning, and after spinning, can be removed from the bobbin, to be transferred and hauled off into strands for cordage from the inner ends thereof, without unwinding, thus effecting a great saving of bobbins and labor.

[This is a capital improvement.]

To Wm. Wheeler, of West Poultney, Vt., for improvement in machines for Dressing Stone.

I claim the cylindrical tool holder, constructed and arranged substantially as set forth, so as to hold the tools, or chisels, and turn them in a direction to cut either way, keeping them in such position as always to receive the blows from the cams, in the same relative direction, and also incidentally to support the cam shaft by means of the cams resting against its interior, should the cam shaft spring.

To J. Ames & G. L. Wright, of Springfield, Mass., for improvement in machines for Ruling Paper.

We claim, first, the shaft and its projections operating as set forth, or any mechanical equivalent contrivances, in combination with the carrying apparatus or endless tapes, on which the sheets are received, moved and introduced to the action of the ruling apparatus, such carrying apparatus being made so as to operate, essentially as described.

And we also claim the shaft and its lifters, in combination with the carrying apparatus or endless strings, and the two sets of ruling apparatus, or contrivances, for supporting and ruling the paper on both sides, as described, such shaft and lifters, or the lifting apparatus, as it may be termed, being for the purpose of changing the overlap of the sheets, in manner as explained.

To Jacob Zimmer, of Tiffin, O., for improvements in attaching Cutters for Cutting Screws on Rails of Bedsteads.

All I claim is forming an opening in the end of the cylindrical head, so as to allow the cutter to be placed therein laterally, or inserted into its seat sideways, and securely confined in the manner set forth, whereby the cutter requires no adjustment, and is retained firmly in its position.

To John Allen, of Cincinnati, O., for improvement in Setting Mineral Teeth.

I claim setting mineral teeth on metallic plates, by means of a fusible, silicious cement, which forms an artificial gum, and which also unites single teeth to each other and to the plates upon which they are set.

I also claim to be the inventor of said cement, or compound, a full and exact description of which is given.

I also claim the combination of asbestos with plaster of Paris, for covering the teeth and plates for the purpose of sustaining them in their proper position, while the cement is being fused.

[The Patent Office is very erratic in its action. Here is a single patent granted for three distinct claims, for which we know many applicants would be ordered to apply for three distinct patents, as one could only be granted for each claim. If proof is wanted, we can furnish it.—[Ed.

DESIGN.

To Edmund L. Freeman, of Bellville, N. Y., for design for framer of presses, mantlepieces, etc.

Municipal Electric Telegraph.

We have received a pamphlet from the author, William F. Channing, M. D., describing an Electric Fire Alarm for cities. The system of Electric Fire Alarms, for cities, which is now being carried out in Boston, suggested itself at an early period to the mind of Mr. Channing, and he described its application to Fire Alarms in the Boston Daily Advertiser, in 1845. In 1845 its adoption was recommended by the Mayor of Boston, the Hon. Josiah Quincy, Jr., but it was not until the present year the plan was adopted, and an appropriation of $10,000 made to carry it out. In New York city, seven of our fire belfries are connected by telegraph wires so as to signalize from one to the other, and it is stated in the pamphlet that accounts have been received from Berlin, Prussia, of the construction of a Fire Telegraph there, but whether like the plan in New York, a mere signalizing one, Dr. Channing says, "does not appear." The Berlin one, we believe, is a mere signalizing one, and is connected with an electric clock—it is used in that city as a messenger in case of fire. The communicating wires have been recently completed,—and it is now possible to announce the outbreak of fire in any part of the Prussian capital, at every engine station within the walls in a few seconds. The watcher observes the red flame rising against the dark sky; in an instant his hand is on the wires, the message speeds along the electric line, the danger is made known to the proper officers, and in a few minutes all the means of resisting a conflagration at the disposal of a great capital can be brought efficiently to bear on the menaced point.

The Electric Fire Alarm of Dr. Channing is a great improvement on the signalizing plan, for it combines an alarm by sounds and is the most perfect system ever brought before the public; it is to be hoped that every city in our Unoin; yea, every one in the world, will, at no distant day, have Fire Alarm Telegraphs. They can be erected at a very small cost, in comparison with the great saving they will effect in communicating to every quarter of our Fire Department, in an instant, the precise localities of fires.

Boiler Tubes.

Mr. Prosser, of this city, has written a letter to the London Mechanics' Magazine, correcting an error in reference to what was stated to be a new improvement in the construction of the boilers of a new Swedish steamer, named the Berselius. It was stated that "the tubes were slightly enlarged behind the tube plate by a suitable tool." Mr. Prosser states that the tubes are fitted in this way in American boilers, and he obtained a patent for a tool to perform the operation at once. All the tubes in the Collins' line of steamers, he states, are fitted in this manner, and no engineer in the United States would think of putting them in by the old tinkering plan still employed in England.

The rooms of the New York Mechanics' Institute were burned down on last Saturday morning. The meetings will be held in the rooms of the school in Chambers street, until new rooms are prepared.

In the British Navy there are one hundred and forty-seven steamships, and thirty-two iron steamers, eleven of which are 1,500 tons burthen.

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TO CORRESPONDENTS.

H. R., of Coburg—Your impressions about a reduction in the price of English patents appear likely to become realized, as we have just learned from our London agents that the abolition of certain sinecures will tend to secure this result. We carefully read your article in manuscript, and did not object to its character but to its length. Your advice about Canada patents exactly corresponds with our impressions.

McF., of Nashville—We should think it would require 2 horse-power to drive a planer of the size mentioned, although we are not certain. They are made by Messrs. Ball & Rice, of Worcester, Mass., to whom you had better apply.

G. W. C., of Ky.—Messrs. Hoe & Co., or Worrall & Co., of this city, are good saw-makers. We think your plan is not patentable.

C., of Pa.—We were not aware, when we replied to your inquiry about saw-mills, that Messrs. Clark & Overton no longer manufactured them. Such of our readers as are in want of Portable Saw-Mills, we refer to Messrs. Geo. Vail & Co., Morristown, N. J.

S. H. of Oregon Ter.—The telegraph wires could not be supported by iron hooks, but must rest upon some non-conducting substance. Glass eyes are generally employed. $2,50 received for paper.

G. B. W., of Ill.—Your letter, with enclosure, came safely; Col. C.'s name is entered upon our subscription books for one year.

B. R. E., of Me.—Fountain pens are in common use in this and other countries; as early as 1844 we imported, for our own use, the first pen of the kind we ever saw, and since that date we have seen a variety of different kinds, some of which have been patented, but never introduced to any extent.

J. B., of N. Y.—We see nothing patentable in your press, and cannot advise an application.

J. A., of Tenn.—We will hand over your letter to an engine builder for attention. The distance between yourself and parties here must be an effectual bar against success, and we do not know that any builders here would engage.

D. W., of Ohio.—A cam to operate the valve rod of a steam engine has long been used. You can see it on some of the Western steamboats.

T. E., of N. P.—We decline your proposition about publishing your perpetual motion.

J. T., of Ohio.—Stone-ware chimney caps we have never seen, but have been informed they had been used in other countries. If we find out that our information is not correct, we will say so in some other number, for if new and useful it is patentable.

N. P. D., of New York.—The intensity and quantity of the battery is the same, but through a long conductor the intensity is diminished, although the quantity remains the same in battery and conductor, the iron bar. The battery employed for intensity to work the electro-magnet, is not a proper one for decomposing water, and will not answer a good nor profitable purpose. You received a most reprehensible answer from the Commissioner. There is no set time for an appeal after the application is rejected, and we know how to feel for you.

C. P. H., of N. Y.—We cannot conceive any patentable point in your suggestion about the bedstead. It is possible you have something new. Please send a sketch and description.

B. A., of N. C.—T. Wood, corner of Chatham and Duane street, this city, is a dealer in tools, and doubtless can furnish such as you require.

S. S., of Hernando.—We do not know of any mechanic who would undertake to make such an engine as you require.

G. W. W., of Phila.—We do no not know of any spark arresting plan superior to the one you present, excepting it may be if you could bring back your sparks to the fire to be burned. You know that the best of our locomotive spark arresters let the small sparks escape. Put a finer screen where the lower one is, and try the effect of it.

Money received on account of Patent Office business for the week ending December 27.

T. H. D., of N. H., $30; W. H., of O., $20; J. H., of Texas, $60.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Dec. 27 :—W. W. V., of Md.; E. G., of Me.

An Important Paragraph.

Subscribers names, as they now come in, will be entered to commence with No. 14, the first number on the second quarter, unless the back numbers are expressly ordered.

Whenever our friends order numbers they have missed—we always send them if we have them on hand. We make this statement to save time and trouble, to which we are subjected in replying when the numbers called for cannot be supplied.

Sending Receipts.---Postage on Books.

The Post Office Laws do not allow publishers to enclose receipts; when the paper comes regular subscribers may consider their money as received.

Subscribers ordering books or pamphlets are particularly requested to remit sufficient to pay postage.

Back Numbers and Volumes.

In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement:

Of Volumes 1, 2 and 3—none.

Of Volume 4, about 20 Nos.; price 50 cts.

Of Volume 5, all but 4 numbers, price, in sheets, $1, —complete sets, bound, $2,75.

Of Volume 6, all; price in sheets, $2; bound, $2,75.

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Terms of Advertising.

One square of 8 lines, 50 cents for each insertion.
" 12 lines, 75 cts., " "
" 16 lines, $1,00 " "

Advertisements should not exceed 16 lines, and cuts cannot be inserted in connection with them at any price.

American and Foreign Patent Agency

IMPORTANT TO INVENTORS.---The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

MUNN & CO., Scientific American Office,
128 Fulton street, New York.

LATHES FOR BROOM HANDLES, Etc.—We continue to sell Alcott's Concentric Lathe, which is adapted to turning Windsor Chair Legs, Pillars, Rods and Rounds; Hoe Handles, Fork Handles and Broom Handles.

This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch and work as smoothly as on a straight line—and does excellent work. Sold without frames for the low price of $25—boxed and shipped with directions for setting up. Address (post.paid) MUNN & CO.
At this Office.

WHITAKER'S PATENT CRADLE—This is an invaluable addition to the Nursery, and no family should be, nor will be, without one of them, after a short time. In practical value, this invention far surpasses every other attempt of the kind. The novel and attractive features of Whitaker's Cradle are, 1st, that it will impart a swinging or rocking motion, as preferred; 2nd, it is propelled by the combined weight of the cradle and child; 3rd, it is destitute of any noise whatever, the moving power being derived through a spring crank: 4th, it will continue to rock or swing, regardless of the shifting of the child from side to side of the cradle; 5th, it can at pleasure, be made to discourse music, which will continue as long as the cradle rocks, if allowed to do so; 6th, it possesses a regulator, with which it can be made to rock or swing fast or slow, as desired.—Union or State rights offered on accommodating terms. Address L. F. WHITAKER, Greenville, Pitt Co., N. C. 16 3*

FOR ONE DOLLAR A-YEAR.---Either of the following journals may be obtained:

THE AMERICAN PHRENOLOGICAL JOURNAL.—A Repository of Science, Literature and General Intelligence, amply illustrated with Engravings.

THE WATER-CURE JOURNAL and Herald of Reforms.—Devoted to Physiology, Hydropathy, and the Laws of Life, profusely illustrated. Terms the same.

THE STUDENT and Family Miscellany, designed for children and youth, parents and teachers. Illuminated with engravings. Terms the same.

THE UNIVERSAL PHONOGRAPHER.—Devoted to the dissemination of Phonography and to Verbatim Reporting, with practical instruction to Learners.—Printed in Phonography. Terms the same

Either, or all of these Monthlies will be sent by mail to any Post Office in the United States, for one dollar a year each. All letters should be post-paid, and directed to FOWLERS & WELLS, No. 131 Nassau street, New York. 16 2t.

PHOTOGRAPHY—A Treatise on the Chemical changes produced by Solar Radiation, and the production of pictures from Nature by the Daguerreotype, Calotype, and other Photographic processes—by Robert Hunt, Professor of Mechanical Science in the Museum of Practical Geology, author of "Researches on Light," "The Poetry of Science," etc.: with additions by the American Editor. The above is the title of a new and complete work upon the Daguerreotype and Photographic art: 12mo. 290 pp., containing 77 illustrations, with fine likenesses of Daguerre and Niepce. Bound in cloth, and forwarded by mail free of postage at the following rates—one copy, for any distance under 500 miles, $1,25; over 500 miles and under 1500, $1.38; any distance over 1500 miles and under 2500, $1,50. Post-Office stamps taken. Address (post-paid) S. D. HUMPHREY, Publishers, New York. 16 3*

WATERLOO IRON WORKS.---Taft & Latourette, iron founders and machinists, manufacture steam engines and boilers, for steam saw mills, grist mills and other purposes. Hutchinson's patent stave heading and shingle machines, clover mills, threshing machines, horse-powers, lathes of various kinds, mill gearing and mill iron of every description. Also, all kinds of iron and brass castings, jack screws, lighter screws, &c.
H. N. TAFT,
A. LATOURETTE.
Waterloo, Seneca Co., N. Y. 1*

VENTILATION.—Mr. Ruttan, of Coburg, Canada, is desirous of an opportunity to direct the erection (for ventilation) of a good dwelling or school house in the city of New York. For particulars inquire at the Scientific American Office. 15 10*

WANTED—To purchase, 10 or 12 ring and traveller Twist and Filling Frames, of 132 to 160 spindles each, new or second hand, in first rate order—also one pair of hand mules, of 500 to 600 spindles, each second-hand. Address DAVID TRAINER, Marcus Hook, Pa. 15 4*

HAWKIN'S Stave Dressing Machine—Is now in operation in the city of Milwaukie, Wis., and will dress from 6 to 8000 staves per day, ready for the truss hoops, and at one operation. Rights for States and Counties, and also machines, for sale, apply to WM. HAWKINS, Patentee, Milwaukie, Wis. 15 20*

A. B. ELY, Counsellor at Law, 46 Washington st., Boston, will give particular attention to Patent Cases. Refers to Munn & Co., Scientific American. 13tf

TRAUTWINE ON RAILROAD CURVES.—By John C. Trautwine, Civil Engineer, Philadelphia; just published and for sale by WM HAMILTON, Actuary of the Franklin Institute Price $1.
"This is a really good work, and we heartily recommend it to our civil engineers."—[Scientific Am.
"We have carefully examined this work, and regard it as the best that has yet appeared on the subject," &c.—[Am. Railroad Jour. 8 10*

POST'S PATENT SLIDING DOOR FRONTS—For Stores and Public Buildings; a new, cheap, and simple fixture for securing store fronts, which renders them fire and burglar proof, has been invented and patented by the subscriber, who is now prepared to sell rights. Messrs. Quarterman & Son, 114 John st., N. Y., are general agents. Address (post paid) Wm. POST, Architect, Flushing, L. I. 6 3m

BILLINGS PATENT BAND WRENCH, for Wagons and Carriages.—This article is fully described and illustrated by engravings in No. 7, Vol. 7. of the Scientific American. The Patent Band Wrench applies to wagons and carriages where the common or square nut is used. They are perfectly tight and prevent all dust and dirt from reaching the axle. The wheel is taken off by means of a small pocket key. A Silver Medal was awarded this article by the American Institute at their late Fair in this city. The Bands are manufactured by the Patent Band Wrench Co., located at Claremont, N. H. Smith Van Horn & Co. are the agents for this city. Orders addressed to them, as above, will meet with prompt attention. A. M. BILLINGS,
12tf General Agent for the Co.

TO STAIR BUILDERS—"The Universal Stair Builder," just published by R. A. CUPPER, Architect, New York, shows plans of the various forms of Stairs, with a new method of sawing the twist part of any handrail and joints, square, from the face of the plank, and to a parallel width, the same as for any horizontal work, which can be done at the saw-mill for one-sixth part of what it costs by hand.—The saving of material and labor is from 50 to 100 per cent. The work is beautifully executed, and the diagrams drawn to a large scale, so that the simplest mind can understand it. Price $6. For sale by Wm Gowans, 178 Fulton st., N. Y.; Benjamin Green, 124 Washington st., Boston, Mass., and at 240 West 26th st., N. Y. Books can be forwarded to any part of the United States, by enclosing the money. 15 3*

THE EXCELSIOR Sand and Emery Papers. are offered as new and superior articles, being manufactured by an improved process; the paper is made from the best Manilla hemp, and consequently is very strong and lasting; the grit is of the sharpest and most enduring kind, and is firmly attached to the paper with a remarkable evenness of surface; their freeness from ridges, stripes, and other imperfections, recommend them to the notice of consumers. These papers have been used by many of our first mechanics, and are pronounced superior to all others. Every sheet is stamped Blanchard & Parsons, and warranted. Samples furnished at the office, No. 187 Water street (2nd story), New York.
14 6m* BLANCHARD & PARSONS.

PATENT CAR AXLE LATHE—I am now manufacturing, and have for sale, the above lathes; weight, 5,500 pounds, price $600. I will furnish a man with each lathe who will turn and finish axles for 50 cents each, if desired. I have also for sale my patent engine screw lathe, for turning and chucking tapers, cutting screws and all kinds of common job work, weight 1500 lbs., price $225. The above lathe warranted to give good satisfaction. J. D. WHITE, Hartford, Ct. 7 6m*

THE SUBSCRIBER has on hand several improved Steam Engines of superior quality, and made of the best materials, particularly adapted to manufacturing, saw mills, flour mills, &c. He will also make to order, at the shortest notice, engines and boilers of from 2 to 50 horse power, with all their appendages; prices reduced. Also, shafting, mill gearing, saw mills, presses, drills, &c. He has also facilities for furnishing lathes, planes, and scroll chucks, of the most approved styles and patterns, at short notice. Chain pumps always on hand, wholesale and retail, at No. 4 Howard st., New Haven, Ct.
10 7* AARON KILBORN.

1851 TO 1856.----WOODWORTH'S PAtent Planing Machines.—Ninety-nine hundredths of all the planed lumber used in our large cities and towns continues to be dressed with Woodworth's Machine. Price of the machine from $150 to $760. For rights in the unoccupied towns and counties of New York and Northern Pennsylvania, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 9 10*

LOGAN VAIL & CO., No. 9 Gold street, New York, agents for George Vail & Co., Speedwell Iron Works, have constantly on hand Saw Mill and Grist Mill Irons, Press Screws, Bogardus' Horse-Powers, and will take orders of Machinery of any kind, of iron and brass; Portable Saw-mills and Steam Engines, Saw Gummers of approved and cheap kind, &c. Gearing, Shafting, large and small, cast or of wrought iron. 11tf

BALLOONS.—I am prepared to manufacture Hydrogen Balloons of from 1 pound to 50,000 lbs. ascending power to order. Balloons capable of carrying up one or two persons always on hand. The Balloons will be of the most perfect construction, so that any person can, with certainty and safety ascend with them. Instructions to insure success given to purchasers gratis. JOHN WISE, Lancaster, Pa. 9 10*

P. W. GATES'S PATENT DIES FOR CUTTING SCREWS—Patented May 8th, 1847.—This Die cuts Screws of any size, V or square thread, by once passing over the Iron. Also, Lead Screws for Lathes, Hoisting Screws, &c. All orders for Dies and Taps, with or without machines, will meet with prompt attention by addressing P. W. Gates, or Gates & McKnight, Chicago; Marshall, Bement & Colby, Philadelphia; Woodburn, Light & Co., Worcester, Mass. References—All the principal machine shops in New York, Philadelphia, and Boston. 13 6m*

CHAS. W. COPELAND, Consulting and Mechanical Engineer, Surveyor of Steam Machinery, &c, No. 68 Broadway, N. Y.—Superintends the construction of steam vessels, and steam engines and machinery of every description; specifications and contracts prepared; also, general plans and drawings in detail furnished. Steam engines surveyed and valued, and condition reported. Mr. C. also acts as agent for the purchase and sale of steam vessels, steam engines, boilers, &c. 14 4*

ADIRONDAC American Cast Steel.—This steel has recently been greatly improved in uniformity, soundness, strength, and toughness. It is purely American, and will be sold as low as the imported; this improved quality is warranted superior to any other in market. Friends of home industry are requested to try this new and uniform steel.
QUINCY & DELAPIERRE,
15 6* Warehouse 81 John st., N. Y

SCRANTON & PARSHLEY, Tool Builders, New Haven, Conn., have on hand six 12 ft. slide lathes, 28 in. swing; also four 8 ft. do.; 21 in. swing, with back and screw gearing, with all the fixtures; one 5 ft. power planer; 12 drill presses, 4 bolt cutting machines, 30 small slide rests; 5 back geared hand lathes, 21 in. swing; 15 do. not geared; 8 do. 17 in. swing on shears 5 1-2 feet; 25 ditto with and without shears, 13 in. swing; counter shafts, all hung if wanted suitable to the lathes. Scroll chucks on hand; also index plates for gear cutting. Cuts of the above can be had by addressing as above, post-paid. 9tf

BEARDSLEE'S PATENT PLANING MAchine, for Planing, Tonguing and Grooving Boards and Plank.—This recently patented machine is now in successful operation at the Machine shop and Foundry of Messrs. F. & T. Townsend, Albany N. Y.; where it can be seen. It produces work superior to any mode of planing before known. The number of plank or boards fed into it is the only limit to the amount it will plane. For rights to this machine apply to the patentee at the abovenamed foundry—or at his residence No. 764 Broadway, Albany. GEO. W. BEARDSLEE. 5tf

WATTS & BELCHER, Manufacturers of Steam Engines, Lathes, Planing Machines, Power Presses, and Mechanics' Tools of all descriptions. Orders respectfully solicited and punctually attended to. Washington Factory, Newark, N. J. 7 20*

PAINTS, &c. &c.—American Atomic Drier, Graining Colors, Anti-friction Paste, Gold Size, Zinc Drier, and Stove Polish.
QUARTERMAN & SON, 114 John st.,
9tf Painters and Chemists.

MACHINERY.—S. C. HILLS, No. 12 Platt-st. N. Y. dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's and Law's Planing machines; Dick's Presses, Punches and Shears; Morticing and Tennoning machines; Belting; machinery Beal's patent Cob and Corn mills; Burr mill and Grindstones; Lead and Iron Pipe &c. Letters to be noticed must be post-paid. 1tf

LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers—from 1 1-4 to 7 inches in diameter. The only Tubes of the same quality and manufacture as those so extensively used in England Scotland, France and Germany—for Locomotive Marine and other steam Engine Boilers.
THOS. PROSSER & SON, Patentees,
1tf 28 Platt-st. N. Y.

MALLEABLE IRON FOUNDRY, EASTON, Mass.—The subscriber continues to manufacture castings of every variety, for machinery and other purposes, of the best quality, at the above establishment, we have facilities for making castings 5 1-2 feet in length. Persons wishing castings can send patterns to Easton Express, Boston, Mass. All letters will be promptly attended to.
8 10* DANIEL BELCHER.

WOOD'S IMPROVED SHINGLE MACHINE—Patented January 8th 1850, is without doubt the most valuable improvement ever made in this branch of labor-saving machinery. It has been thoroughly tested upon all kinds of timber and so great was the favor with which this machine was held at the last Fair of the American Institute that an unbought premium was awarded to it in preference to any other on exhibition. Persons wishing for rights can address (post-paid) JAMES D. JOHNSON, New Haven, Ct.; or WM. WOOD, Westport; Ct., All letters will be promptly attended to. 37tf

LEONARD'S MACHINERY DEPOT, 109 Pearl-st. 60 Beaver N. Y.—The subscriber is constantly receiving and offers for sale a great variety of articles connected with the mechanical and manufacturing interest, viz.: Machinists' Tools—engines and hand lathes; iron planing and vertical drilling machines; cutting engines, slotting machines; bolt cutters; slide rests; universal chucks &c. Carpenters' Tools—mortising and tennoning machines; wood planing machines &c. Steam Engines and Boilers from 5 to 100 horse power. Mill Gearing—wrought iron shafting; brass and iron castings made to order. Cotton and Woolen machinery furnished from the best makers. Cotton Gins; hand and power presses. Leather Banding of all widths made in a superior manner; manufacturers' Findings of every description. P. A. LEONARD. 10tf

MANUFACTURE OF PATENT WIRE Ropes and Cables—for inclined planes, suspension bridges, standing rigging, mines, cranes, derick, tillers &c.; by JOHN A. ROEBLING; Civil Engineer—Trenton N. J. 47 1y*

RAILROAD CAR MANUFACTORY—TRACY & FALES, Grove Works, Hartford, Conn. Passage, Freight and all other descriptions of railroad Cars, as well as Locomotive Tenders, made to order promptly. The above is the largest Car Factory in the Union. In quality of material and in workmanship, beauty, and good taste, as well as strength and durability, we are determined our work shall not be surpassed. JOHN R. TRACY,
39tf. THOMAS J. FALES.

BEST CAST STEEL AXLES AND TYRES, (a new article,) for Railroad Carriages and Locomotives. The quality of this steel is sufficiently attested in the announcement that it has carried off the first prizes awarded at the World's competition of 1851, in London. The axles are in general use on the Continent, and are now offered in competition with any other that can be produced; and to be tested in any way that may be desired by the engineers of the United States, either by impact or by torsion. This steel is manufactured by Fried Krupp, Esq., of Essen, in Rhenish Prussia, represented in the United States by THOS. PROSSER & SON, 28 Platt st., N. Y.
2tf.

IRON FOUNDERS MATERIALS—viz.: fine ground and Bolted Sea Coal; Charcoal, Lehigh, Soapstone and Black Lead Facing. Iron and brass moulding sand; Fire Clay, Fire sand and Kaolin;—also English, Scotch and Welsh Fire Bricks—plain arch, circular and tower cupola—for sale by G. O. ROBERTSON Liberty place, between 57 and 59 Liberty-st. (near the Post Office) N. Y. 7 12*

McCORMICK'S PATENT REAPERS AND MOWERS.—1700 of these machines, for which the great Medal of the World's Fair was awarded, are being manufactured at Chicago, Ill, with the intention of supplying the South-eastern States for the next harvest The gold medal of the Chicago Institute was recently awarded for this Reaper and Mower, tested against two other mowers, in cutting prairie grass; and the first premium of the State Agricultural Societies of Wisconsin, Michigan and Pennsylvania, were also awarded at their late Fairs. Price $120 at Chicago, and $122 delivered at Philadelphia; terms otherwise accommodating. 9tf

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SCIENTIFIC MUSEUM.

India Rubber.

Since the art of vulcanizing india rubber—an American discovery—was first made, its use has become almost universal. It is used for almost everything in the shape of an air-tight and elastic material. The vulcanizing of india rubber is due to sulphur combining with the india rubber, and then submitting the material to a great heat, high pressure steam, or an oven heat. The elasticity of the india rubber is maintained, while it is rendered water-proof, and remains unaffected by heat; while in its unprepared, unvulcanized state, it is easily affected by the weather.

Mr. Hodges, an Englishman, proposes to employ this enormous elastic power to the raising of heavy masses. Short pieces of caoutchouc, called by the inventor "power purchases," are successively stretched and attached to the burden to be raised; when a sufficient number of these power-purchases are fixed to the weight, their combined elastic force lifts it from the ground. Ten of these apparatus raise, together, 1000 lbs. This power, though obedient to the common law of mechanical forces, yet differs sufficiently from known forces to be distinguished as a new power. The same principle is applicable to the towing of vessels; it can equally be made use of for raising the anchor, &c.

By an inverse principle, the power-purchases may be employed as a power for projection. Thus a certain number of these agents might be attached to a cannon tube constructed for throwing harpoons. This new process has been tried with success. An eighty-pounder thus charged has thrown a ball 150 yards.

To be Invented.

In the coal region of Schuylkill County, Pa., the waters are so impregnated with sulphur and iron, that it is no uncommon thing to burn out two sets of boilers at a colliery in one year: the iron is completely eaten up by the water. The only way of giving partial defence to the boiler is to put on the inside a monthly coat of tallow or of Silver's mineral paint, made into almost a paste with oil. Some simpler and less troublesome way of precipitating the sulphur, commends itself to the notice of inventors, as something that will pay.

QUERE.—How would it answer to put a coat of enamel inside of boilers? Or is it not possible to substitute something for iron?

SHUTTERS, as at present in use, afford very little protection and still less beauty. Can we not improve both qualities by using sheets of hooked or woven wire, to roll up like a window shade? At least they would be knife-proof.

The Safe of William Penn.

The editor of the Cincinnati Nonpareil has had the gratification of beholding a dilapidated specimen, in the shape of an iron safe, that eclipses all the antiquities that ever before came under his supervision. It passed through that city the other day on its way to St. Louis, at which place the antiquity is to receive a prominent location in the Museum. This identical safe is the veritable one that Wm. Penn brought from England, and it was on the ground where he treated with the Delaware tribe of Indians on the Delaware river. The safe is singularly and ingeniously constructed, and contains several compartments which, he says, would puzzle the ingenuity of any person living in this age to ascertain their whereabouts. The name of Wm. Penn is prominently engraved upon one of the inward plates, the letters carved in an awkward form.

The Effect of the Rotation of the Earth upon the Flight of a Projectile.

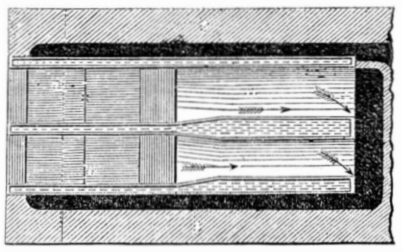
Capt. Boxer, of Woolwich, Eng., has recently been investigating with regard to the rotation of the earth, viz:—

The amount of its effect upon a projectile in causing it, during its flight, to deflect from the object to which it is directed, or more correctly speaking, the object to alter its position with regard to the path of the shot. He finds by calculation based upon data taken from actual practice, that in latitude 52 deg. a ball projected due south 5,600 yards, whose time of flight was 34 seconds, would fall 10·914 yards to the north; the shot will fall nearly the same distance east of the object, but still to the right of the direction.

Capt B., by a process of reasoning, shows that the same amount of effect would be produced if the ball were projected due east or west, and finally arrives at the conclusion that the deviation of the shot will be the same in amount in the same latitude, or nearly so, whatever may be the direction of the range, and that the deviation will in all cases be to the right of the object. He does not consider it of any practical importance in the present state of gunnery, yet, he further remarks, perhaps at some future time such perfection may be obtained in the machine from which the shot is propelled, as well as in the projectile itself, as to make it worth while taking into account the rotation of the earth.

On Boilers.---No.6.

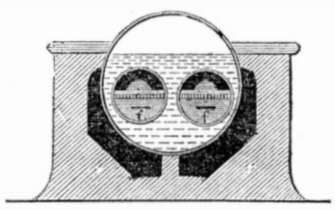
FIG. 12.



FAIRBAIRN'S DOUBLE-FLUED BOILER.—This boiler was patented a number of years ago by Mr. Fairbairn, of Manchester, Eng., the well known engineer and joint inventor of the Britannia Tubular Bridge. Figure 12 is a horizontal section or plan of the boiler and flues and figure 13 is a transverse section. A boiler of this kind was put up by Mr. Armstrong, the well known author of the work on boilers, to drive a 60 horse-power Bolton and Watt engine.

The cylindrical part of the shell, as well as the flat ends of the boiler, are made of 3-8 inch iron; it is 9 feet in diameter by 20 feet long, and contains two flue tubes, each 3 feet 4 inches diameter, but rather deeper at the front ends, which contain the two furnaces. which are of low or moor iron, and only 3-8 thick. There is sufficient space between the flues, which are 13 inches apart, for a man to get through. The flat ends are braced together as usual, and also have four additional oblique stays at each end, radiating to different points of the upper half of the boiler; these, together with the two flues, *f f*, in the lower half, pretty well equalize the internal strain on the different parts of the boiler. It was

FIG. 13.



intended to work at about 15 or 16 lbs. per square inch, therefore it was proved at 30 lbs., that being about 1-3rd of its maximum strength, which it stood without any deflexion, and which is only about 1-10th of the ultimate or bursting strength of the boiler.

This boiler contained 54 yards of effectual heating surface, and it was found to work most economically at 50 nominal horse-power, that is, evaporating 50 cubic feet of water per hour; the evaporation at that rate was 8 lbs. of water to 1 of coal. The boiler was made to work under 20 lbs. pressure. It was a very short boiler in comparison to its diameter, namely 9 feet to 20 feet, and this is rather opposed to the Cornish system of boilers. This boiler was compared with one of the same diameter and same size of flues, but 28 feet long, that is its working economy. The result was that it was found to be as economical, and Armstrong states that the facts proved conclusively the truth of a rule he adopted, namely, that nothing is to be obtained by a boiler of this kind longer than three times its diameter.

He also asserts that the current notions about the danger of explosion, by having boilers of large diameter, and of loss of fuel for want of length, are mere prejudices: the danger of explosion he believes, is more to be dreaded from bad materials, bad workmanship, and small boilers which a man cannot get properly into to clean and keep in repair, than all other causes put together. The weakest part of a boiler constructed on this principle of Fairbairn, is the internal furnace or flue tube which is liable to collapse if made of thinner iron than the shell. It is held by Tredgold that the mathematical stress applies to the external pressure on the flue tube, as to the internal pressure against the shell; therefore ½ inch thick is sufficient for a six foot shell and ¼ inch is enough for a three foot flue to sustain the same pressure so long as the latter retains its true circular figure. It is not possible to do this in a wrought-iron boiler, therefore, boiler makers make the flue tube 3-8 of an inch thick. Armstrong believes that the flue should be made of as thick if not thicker iron than the shell. He believes that of high pressure boilers, for steam navigation, Oliver Evans's plan of small water tube boilers is the best. The most judicious way of strengthening the large internal furnace flues of boilers is by rivetting on them a series of ribs of angle or T iron at short distances apart, similar to those used for the tops of locomotive fire boxes.

Cold Weather.

The weather, during the past two weeks, has been unusually severe in this city, more so than it has been at the same period for ten years. The sleighing for some days was good and the air bracing, cold, clear, and crisp.

We see, by the accounts from various places, that severe cold has been very general throughout our country. In Europe they have also had an early winter. Many people among us state that they believe we are going to have a long and severe winter. The reasons they give are, "we have not had a severe winter for a long time, and we may expect one now." All we have to say is, if the weather continues for the next two months as severe as it has for the past two weeks, we shall have a winter to speak about for this latitude. In connection with this, let us say that, for fifteen years past, the winters in New York have been exceedingly mild, in comparison with what they used to be; and old people say "we know nothing about cold now." It used to be no uncommon thing to cross on the ice from this city to Governor's Island, and in the winter of 1820 heavy teams crossed for some weeks on the ice from Jersey City to New York. If, as some geologists affirm, the dry land is drifting somewhat up to the North Pole, how comes it that the winters are milder now, both in this part of our continent and in various parts of Europe, than what they were in days long gone by.

Death of the Water Cure Founder.

Priessnitz, the celebrated founder of hydropathy, died at Graefenberg on the 26th of Nov., at the age of 52. In the morning of that day Priessnitz was up and stirring at an early hour, but complained of the cold, and had wood brought in to make a large fire. His friends had for some time believed him to be suffering from dropsey of the chest, and at their earnest entreaty he consented to take a little medicine, exclaiming all the while, "it is of no use." He would see no physician, but remained to the last true to his profession. About 4 o'clock in the afternoon of the 26th he asked to be carried to bed, and upon being laid down he expired.

The Prometheus arrived at this port on Monday last, with $568,000 in gold. The gold mines yield more than ever.

LITERARY NOTICES.

THE ILLUSTRATED LADIES KEEPSAKE.—Edited by A. Abbott, published by John S. Taylor, 122 Nassau street, New York. It embraces twelve fine steel engravings of the following celebrated women of the Bible, with descriptive sketches of each:—Jepthah's Daughter, Esther, Ruth, Miriam, Bathsheba, Sarah, Rahab, Judith, Herodias, Martha, the Woman of Samaria, Mary Magdalene. It is an octavo of 380 pages, elegantly bound in gilt, and contains much original matter, prose and poetry, of a character eminently calculated to imspire noble and elevated thought. We commend this work to the patronage of ladies especially, and to the gentleman who gives, with discriminating taste, nothing more appropriate or acceptable to refined sense could be selected. Sent by mail, free of postage, bound in cloth $2, imitation Turkey $3; morocco, full gilt, $4.

DREAM LAND BY DAYLIGHT.—Messrs. Redfield, Clinton Hall, have just issued a pretty holiday token of 425 pages from the pen of Caroline Chesebro. Miss Chesebro is an authoress of merit well known to the magazine world for her piquant stories. Published and for sale as above.

NEW PROSPECTUS

OF THE

SCIENTIFIC AMERICAN.

Commencing a new year, we take the opportunity to express our grateful acknowledgments to the patrons of the Scientific American for the deep interest manifested in its success. We aim to furnish a journal not only popular, but eminently practical in the several departments of Chemistry, Mechanics, Engineering, and Manufacturing. Without employing the ordinary appliances, such as local and general canvassers, we have mainly depended upon voluntary subscriptions, allowing the character of the journal to find its way to the regard of individuals. Our general expectations have not been disappointed, for out of the large list of cash-paying subscribers, whose names are familiar to us from a long association, we recognize many active energetic friends, whose influence we yearly profit by.

We are grateful for all favors, and as our success is centered in the support of that valuable class whose labors are not only enriching and adorning, but elevating the character of our country, we must still claim their active and co-operative sympathy. For the small sum of two dollars we are furnishing an Encyclopedia of the Arts and Sciences, covering over 400 pages, richly illustrating the progress of invention and discovery throughout the world. Considering that this sum is one-fourth less than the cheapest English publication, it may not be necessary to state that a large subscription list is required to sustain it.

The fact of its success is no longer predicated upon doubt; but, that we may be enabled to carry out our future designs, an increased subscription list will be necessary. We anticipate, from the continued support of our friends, that we shall be able to advance the Scientific American, in point of circulation, to a position second to none in this country; and we promise a journal not inferior in its character, size, and ability to any other.

The views promulgated through its columns have received the approbation of the American press, and it is a source of gratification to us that it has gained, and still is gaining a strong foot-hold in Europe, and is quoted as the leading American Scientific Journal. A recent London paper says, "it is excelled by few periodicals," and proceeds to regret that the English tax upon literature does not permit so cheap and valuable a work to circulate within the reach of the laboring and producing classes, whereby they may become, not mere machines, but, like most of our American Mechanics, intelligent, influential citizens.

No land is so highly favored as our own in respect to educational privileges—none where all the appliances are so easily and cheaply obtained—a cheap press and a system of free education, are the elements which enter largely into our National character. A people to be free and happy must of necessity be intelligent. We should not esteem our blessings lightly, but strive to improve them. It is unquestionably true that men, practically scientific, are among the most useful class in a community, and our greatness as much depends upon them as upon any other class. The statesman, the lawyer, the minister, and the farmer, have each their appropriate work, but in the great scheme of internal improvement, the mechanic, the man of science, is wanted.

We offer these suggestions as entirely relevant to our present subject, and urge our mechanics to become readers; and, if consistent with their feelings, subscribers to the Scientific American, for we feel assured that in fifty-two numbers they will find information worth to them infinitely more than the amount paid for it. It is difficult to maintain a good Scientific Journal at so small a price, as many can sorely testify from experience; and had we not a clear field at the commencement, and a tolerable capital, the Scientific American would not now enjoy its present position.

Through our extensive facilities as American and Foreign Patent Agents, we are enabled to furnish our columns with a most complete summary of all the new improvements; and having agents located in London and Paris, we are early notified of changes in Foreign Patent Laws affecting inventors' interests. We hope to improve the value of the Scientific American by constant and unremittimg care, and to secure a continued and increasing patronage from the public.

We hope our friends are not forgetting to exercise their usual kind offices, but are continuing to recommend their neighbors to subscribe and to form clubs for the new year.

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